



Tekla Structures 2018

Manage Tekla Structures

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1 Get started as a Tekla Structures administrator

To get started as a Tekla Structures administrator, you should familiarize yourself with the concepts related to installation, licensing and customization.

- Installation from the point of view of an organization's Tekla Structures administrator is explained in [Tekla Structures installation for administrators \(page 11\)](#).
- License administration tasks are explained in [Manage licenses \(page 31\)](#).
- You can customize Tekla Structures extensively and distribute the customized configurations using various configuration files. Basic customization tasks are explained in [Tekla Structures setup guidelines for administrators \(page 116\)](#) and [Environment, company and project settings for administrators \(page 129\)](#). See [Files and folders in Tekla Structures \(page 224\)](#) for more detailed information on the file and folder structure.

1.1 Information sources for administrators

Tekla User Assistance

Tekla User Assistance provides help information for all levels of users, including administrators. You can access the Tekla Structures help material in Tekla User Assistance by pressing the F1 button in Tekla Structures. If you have a dialog box open, Tekla Structures takes you straight to the related topic.

By default, all help content is online. Offline help installation packages are available in [Tekla Downloads](#). We recommend that you use the online help when possible as it is updated constantly.

The help is also available when Tekla Structures is not running. Depending on your Windows operating system, through the **Start** menu or **Start screen**, select the Tekla Structures <version> and click **Documentation**.

Release notes and Administrator's release notes

Release notes and Administrator's release notes are published in Tekla User Assistance for each new main and intermediate version of Tekla Structures. They contain very useful information that you can use when upgrading to a newer version of Tekla Structures.

Release notes contains information about the new features, improvements and fixes to existing features. Administrator's release notes contains useful information on how to localize and start using the new features in Tekla Structures.

Tekla Discussion Forum

[Tekla Discussion Forum](#) is a useful place to share experiences, ask questions, and discuss with advanced users. You need a Trimble Identity to log in.

Tekla Structures training

To use Tekla Structures to its full potential we strongly recommend users to attend training courses held by the local Trimble Solutions office or a reseller.

Your local support

If you have a valid maintenance contract, you can e-mail or phone your local support for help.

You can find the email address and phone number of your local support in [Tekla User Assistance](#) when you are logged in and your account is connected to your organization's group.

2 Tekla Structures installation for administrators

You can install Tekla Structures on a workstation using the standard installation packages or by creating your own centralized installation using MSI packages. You can also run Tekla Structures in a Citrix virtual environment.

To use Tekla Structures, you also need to install a license server.

2.1 Installation requirements

Trimble Identity

Tekla Online services use Trimble Identity for identification. You can use your Trimble Identity with other Trimble services, such as Trimble Connect and SketchUp 3D Warehouse.

Each organization has at least one account administrator, who is responsible for managing the organization group used in Tekla Online services. As an administrator, you manage the people in your organization group so that they can access the services they need. Several people in your organization can be administrators. The first user is invited by a Trimble representative, and that person is then responsible for adding other users and administrators as necessary.

As an administrator, you are responsible for:

- Inviting employees to your organization's user group to include them in your organization's maintenance contract and allow them access to the following services:
 - Tekla Model Sharing. You must also choose the individual users who are allowed to use your organization's Tekla Model Sharing licenses and keep track of license expiration date(s).
 - Tekla discussion forum.
 - Some additional content in Tekla User Assistance and Tekla Warehouse.

- Removing people from your organization's user group when they no longer belong to your organization.

For more information, see [Trimble Identity for Tekla Online services](#) and [Managing Trimble Identities and Tekla Model Sharing licenses](#).

Operating system and hardware recommendations

Tekla Structures can be installed on recent 64-bit Windows operating systems.

If the operating system is not one of the supported versions of Windows, the installation is cancelled. The installation also requires that Microsoft .NET Framework 4.5.1 or newer is installed on the computer. The installation of .NET Framework 4.5.1 is included in the Tekla Structures installation package, and it is executed if needed.

For more information on recommended operating system and hardware specifications, see [Tekla Structures 2018 Hardware Recommendations](#).

2.2 Installing Tekla Structures

You can download Tekla Structures software and environments from [Tekla Downloads](#). To have the latest software in use, we recommend that you install the latest service pack of Tekla Structures. Service packs include improvements and fixes to the latest or to a previous main version or service pack of Tekla Structures. Service packs are available for all users with a valid maintenance contract.

NOTE You need to install Tekla Structures with administrator rights.

When you use centralized installation to install Tekla Structures on the client computers, the end users do not necessarily need administrator rights.

Tekla Structures installation wizard has detailed instructions about the installation. For more information, see also [Install Tekla Structures](#).

2.3 Centralized installation of Tekla Structures

Installing Tekla Structures centrally across the company network saves time in a large company when there are many Tekla Structures users.

Centralized installation allows you to run the Tekla Structures installation silently in the background so that the users do not see the installation wizard dialog boxes. For detailed information on centralized installation, see [Centralized distribution of Tekla Structures 2018](#).

2.4 Installation in a virtual environment

You can also run Tekla Structures in a Citrix virtual environment. Application and desktop virtualization allow users to run software from a Citrix server on the network without locally-installed Tekla Structures on their workstation. For detailed information on virtualized installation, see [Using Tekla Structures with application and desktop virtualization \(page 25\)](#).

2.5 Installing the license server

FlexNet licensing system

Tekla Structures uses a licensing system called FlexNet Publisher License Management (FlexNet), a system provided by Flexera Software. The FlexNet licensing system is activation-based, which means that hardware locks or passwords are not required. Instead, a floating license system is used where the license is stored on a license server.

If you only use one license of Tekla Structures, you can install the license server on the same computer as Tekla Structures, making the license available on this one workstation. In an environment with multiple licenses and users, you install the license server in your company network, which allows for more flexible and efficient use of your licenses according to need.

When a user starts Tekla Structures, the program checks for an available license from the license server and uses that license. When the user exits Tekla Structures, the license becomes available for other users connected to the same license server. For offline use, the user can borrow a license from the server and then return it later.

To see which license server version to use with your current Tekla Structures version, see [Which license server version to use \(page 44\)](#).

In an activation-based licensing system, the following tasks need to be performed before users can start using Tekla Structures:

- Install and set up a license server on a computer.
- Save the entitlement certificate and activate the licenses.
- Connect each client computer with Tekla Structures to the license server.

NOTE Keep backup copies of your license entitlements in a safe place.

For more information, see [Tekla Structures licensing system \(page 31\)](#).

Operating system

The server that is used as the Tekla Structures license server does not have to be very efficient or have maximum performance capability. However, it is important to ensure that the server hardware is reliable, and to maintain the server system carefully. See [Tekla Structures 2018 Hardware](#)

[Recommendations](#) for information on operating systems and virtual machine platforms.

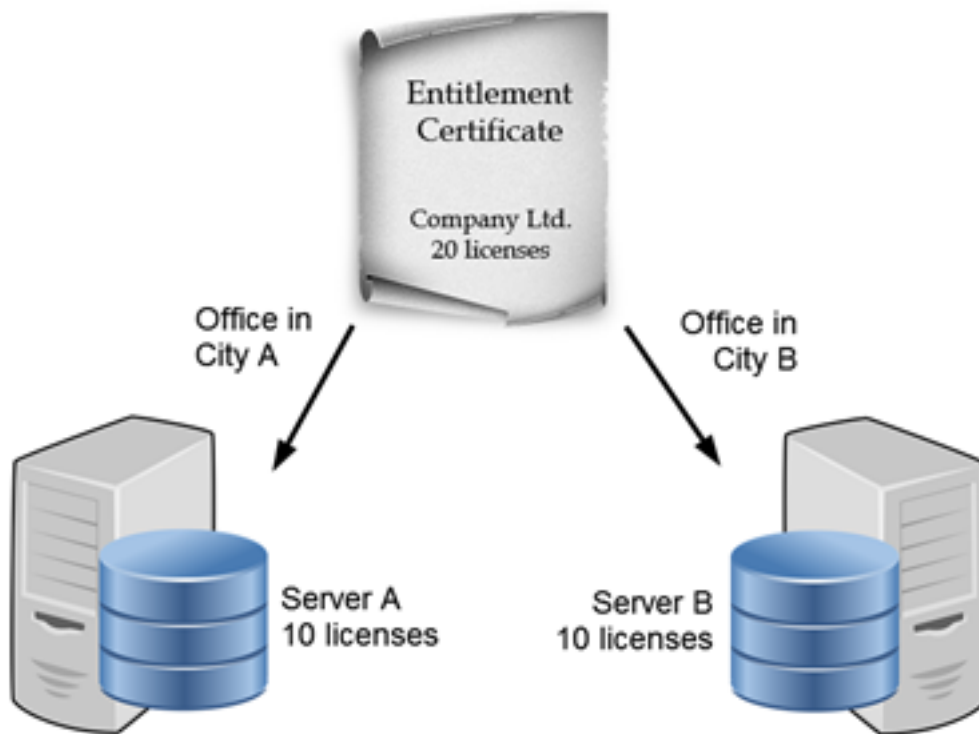
For more detailed information on how to set up the license server, see [Installing Tekla Structures license server \(page 43\)](#) and [Checklist for the Tekla Structures license server administrator \(page 35\)](#).

Useful information on the FlexNet system can be found in the documents provided with the installation and in [Tekla Downloads](#). The following introductions are available:

- **FlexNet License Administration Guides** by Flexera Software are general guides that contain, for example, instructions on how to create user groups and manage access rights:
 - C:\TeklaStructures\License\Server\fnp_LicAdmin.pdf
 - C:\TeklaStructures\License\Server\LicenseAdministration.pdf

Using multiple license servers in one company

You may want to spread your license pool on several servers in your company. You may have offices in many cities, each office with its own license server, or you may simply want to divide the license pool if there is server downtime.

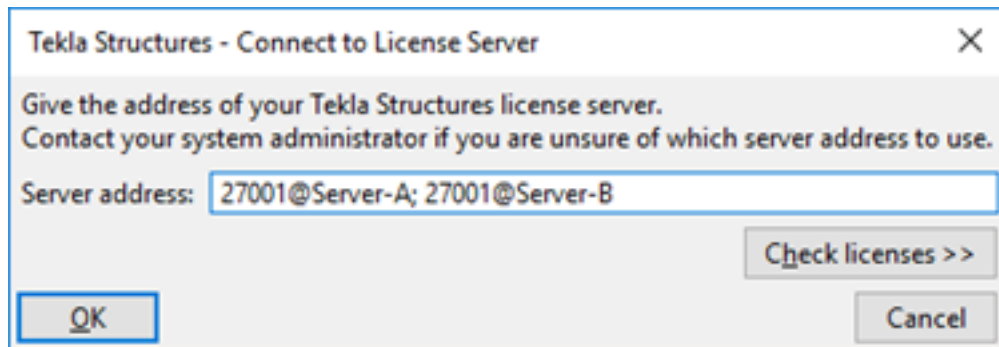


For example, you can divide your total license entitlement on several servers simply by activating one half of your licenses on one server and the other half of the licenses on another server. This way, if there is a maintenance break on one of the servers, you can advise your users to obtain the license from the other server.

You can also configure Tekla Structures to check licenses from several servers:

1. In Tekla Structures, open a model and click **File --> Settings --> Change license server**.
2. In the **Server address** box, give the port@host addresses of the license servers separated with a semicolon (;).
3. Click **OK**.

The updates will take place the next time you start Tekla Structures.



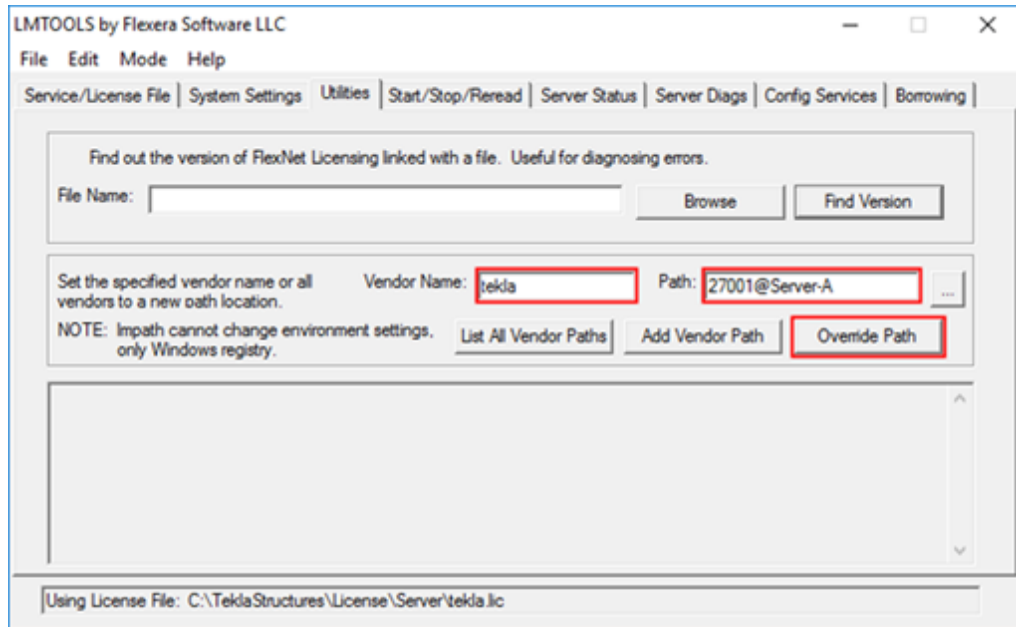
NOTE Defining several license servers may slow down the starting of Tekla Structures. Therefore, we do not recommend defining more than two servers in the **Connect to license server** dialog box.

Monitor license usage

You can monitor the usage of Tekla Structures in your company based on the licensing information. The tool for monitoring the license usage is called **LMTOOLS**, and it is delivered with the Tekla Structures license server. The license server statistics area on the **Statistics** tab displays information about the license use. For more information, see Tekla Structures License Administration Tool options and settings.

To view which licenses are currently in use, you need to have administrator rights and take the following steps on your license server:

1. Go to **Tekla Structures Licensing --> LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Utilities** tab, define which license server you want to monitor. Type `tekla` in the **Vendor Name** box and your license server port@host definition in the **Path** box.
3. Click **Override Path**.
4. On the **Server Status** tab, click **Perform Status Enquiry**. You will now receive a listing of how many licenses and which configurations are activated on the server, and how many of the licenses are in use at the moment of enquiry.



The status enquiry functionality uses abbreviations of Tekla Structures configurations. You can find the description of the abbreviations in your entitlement certificate or in Tekla Structures License Administration Tool.

For a comprehensive description of the status enquiry syntax, see LMTOOLS options and settings used in Tekla Structures licensing.

2.6 Tekla Structures multi-user server

Multi-user mode allows several users to access the same model simultaneously. Multi-user mode is suitable for local teams with projects where the team members work in the same location, and do not necessarily have an Internet connection.

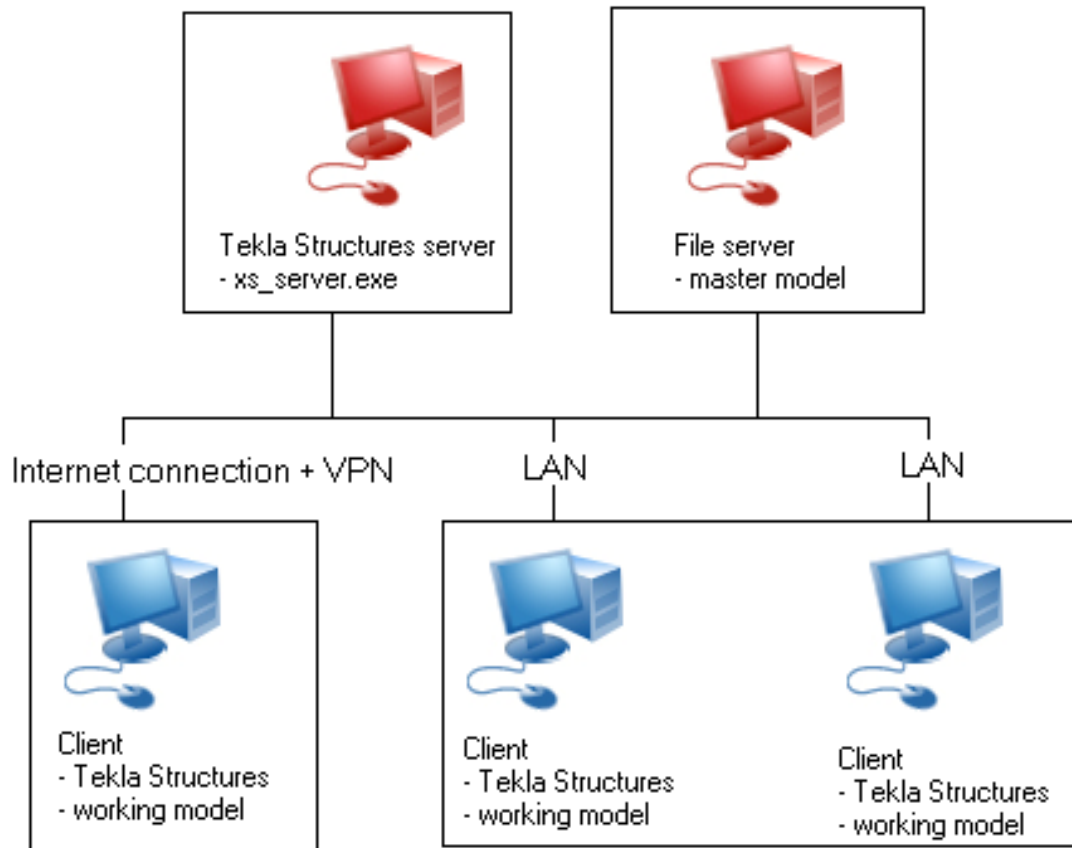
If your company takes part in external projects, or whenever more than one user works with the same model at different locations, we recommend that you use Tekla Model Sharing instead. With Tekla Model Sharing, the users in your company can work with the same shared model, offline and with high performance, and synchronize the changes with other team members even in a low-speed network. Tekla Model Sharing requires a separate subscription. You can view and manage your company's shared models with [Management Console](#) for Tekla Model Sharing.

The multi-user model consists of a single master model. Each user can access this model and open a local view of the model. The local view is called a working model. Any changes a user makes to the working model are local and not visible to other users until the working model is saved to the master model. The multi-user system can contain several client computers, where users work on their working models. The master model can be located anywhere in the network, including any of the client computers.

A Tekla Structures multi-user system runs in your organization's internal network using standard TCP/IP networking and consists of:

- Tekla Structures multi-user server computer running `xs_server.exe` (started by the `AlwaysUp` utility)
- A file server computer containing the master model
- Client computers running Tekla Structures

The image below shows one possible configuration of the multi-user system.



The multi-user server is a separate installation that is available in Tekla Downloads.

For instructions on how to install the multi-user server and on how to run the multi-user server as a service, see [Multi-user system](#).

NOTE When more than one user is working within the same model in different locations and at different times, use Tekla Model Sharing instead of the multi-user mode.

2.7 Installing .tsep packages

Tekla Structures extension packages, .tsep packages, are Tekla Structures extensions or additional environment content installers. .tsep packages are available for download in Tekla Warehouse.

You can install .tsep packages in three different ways.

Direct installation


1. Double-click the .tsep installer that you have downloaded.
2. The **Tekla Structures extension manager** dialog box opens with the name of the extension that is going to be installed.

By default .tsep installers are opened with **Tekla Structures extension manager**. Some .tsep installers are run directly from Tekla Warehouse with the **Insert into model** option.
3. Select the Tekla Structures versions to which you want to import and click the **Import** button. The next time you start Tekla Structures, the extension is automatically installed, and it is shown in **Tekla Structures extension manager**.

NOTE If the .tsep installer is not set to open with **Tekla Structures extension manager** by default, you can set it manually. Right-click on the .tsep installer and select **Properties**. In **Opens with**, select **Change** and browse to `TsepFileDispatcherLauncher`.

Installation in Tekla Structures extension manager

You can also install a .tsep installer from **Tekla Structures extension manager** in Tekla Structures.

1. In the **Applications & components** catalog, click  > **Manage extensions** --> **Extension manager** to open **Tekla Structures extension manager**.
2. Click **Import** and browse to the .tsep installer that you want to install.
3. Click **Open**.

The imported .tsep is installed the next time you start Tekla Structures. It is shown in **Tekla Structures extension manager**, and is ready for use in the **Applications & components** catalog.

Centralized installation

You can centrally install a batch of .tsep installers across company workstations. This method is meant for system administrators.

By default, the .tsep installers waiting for installation are stored in `\ProgramData\Tekla Structures\<version>\Extensions\To be installed`. To install centrally, you need to copy the .tsep installers to the

%XSDATADIR%\Extensions\To be installed folder. Create the \To be installed folder if it does not exist yet.

When Tekla Structures starts, it checks the available .tsep installers from the \To be installed folder and installs them automatically. If there is an older version of the same extension package, it is uninstalled before installing the new version. Installation is cancelled if the same or newer version has already been installed.

- The installed .tsep installers are stored in the %XSDATADIR%\Extensions\Installed folder.
- Invalid .tsep installers are uninstalled and moved to the %XSDATADIR%\Extensions\Invalid installations folder.
- Cancelled .tsep installers are stored in %XSDATADIR%\Extensions\Cancelled installations.

Copying .tsep installers

We recommend that you use ROBOCOPY from the command prompt (cmd.exe) to copy the .tsep installers. More information on ROBOCOPY can be found on the Microsoft website, for example.

The basic syntax for ROBOCOPY is: robocopy <Source> <Destination> [
[<File>[...]] [<Options>]

For example, to copy .tsep installers:

```
robocopy
"\\Server1\prod\TeklaStructures\2017\Environments_TSEP"
"C:\ProgramData\Tekla Structures\2017\Extensions\To be installed"
*.tsep
```

This command will take all .tsep installers from the \Server1 network directory and copy them to the local user's \To be installed folder.

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\duc1u>robocopy \\Server1\prod\TeklaStructures\2017\Environments_TSEP C:\ProgramData\Tekla Structures\2017\Extensions\To be installed *.tsep

ROBOCOPY    ::    Robust File Copy for Windows

Started : Wed May 18 09:54:07 2016
Source   : \\Server1\prod\TeklaStructures\2017\Environments_TSEP\
Dest     : C:\ProgramData\Tekla Structures\2017\Extensions\To be installed\
Files    : *.tsep
Options  : /COPY:DAT /R:1000000 /V:30

100%      New File          3      \\Server1\prod\TeklaStructures\2017\Environments_TSEP\
                                         81.31 MB      Env_UK_Test.tsep

-----
Dirs :      Total      Copied      Skipped      Mismatch      FAILED      Extras
  1 :           1           0           0           0           0           0
Files :           3           3           0           0           0           0
Bytes :    153,47 MB    81.31 MB    72.16 MB           0           0           0
Times  :  0:00:00      0:00:00      0:00:00              0           0           0

Speed :           105122094 Bytes/sec.
Speed :           6015.706 Megabytes/min.

Ended   : Wed May 18 09:54:10 2016
C:\Users\duc1u>
```

Centralized uninstallation

You can uninstall .tsep packages in batches by creating an empty file without an extension, with the name RemoveExtensionOnStartup, in \ProgramData\Tekla Structures\<version>\Extensions\Installed\

[Extension_To_Be_Uninstalled]. The extensions are removed the next time Tekla Structures is started.

2.8 Upgrading Tekla Structures

You can install service packs on top of the existing installation of Tekla Structures. You can update to new service packs without updating the existing licenses. A new Tekla Structures version installs as a separate instance and can exist on the same workstation with other Tekla Structures versions. An update to a new version requires that you also update your licenses, as the licenses have a highest allowed version.

If you already have an older version of Tekla Structures installed on your computer, you can use Migration Wizard to copy the personal settings to the new version. With the Migration Wizard you can choose to copy any of the following settings and values:

- `user.ini` file
- Registry values, such as:
 - Toolbars
 - Dialog boxes
 - General options

When you customize Tekla Structures, for example, add or change drawing or report templates and catalog entries, we strongly recommend that you create project and firm folders for the customized files. This is useful if you want to store the files for future use, or if you want to retain them when you install a new release.

Tekla Structures does not replace files in the project and firm folders when you install a new release. You can retain your customized files without having to copy and paste, or export and import from the previous versions. This makes upgrading faster and easier. If you have customized previous Tekla Structures versions without using firm or project folders, you will need to transfer the customized information to the next Tekla Structures version.

Before you start using a new Tekla Structures version, always test that the old company settings work.

TIP If you want to copy the settings later, you can start Migration Wizard manually by double-clicking the `MigrationWizard.exe` in the `\Tekla Structures \<version>\nt\bin\applications\Tekla\Migrations` folder. You can select the version from which the settings are copied and the version to which the settings are copied.

2.9 Folder structure

Folder structure on local computer

See Tekla Structures installation folders for information on how the folder structure on the local computer is set up.

Company folder structure

We recommend using a central file folder for storing the models and setup files for the company-specific settings and the project-specific settings. Tekla Structures then reads the settings from the central file server. When upgrading to a new Tekla Structures version, or updating the company logo, for example, the files only need to be replaced in one place. This way taking backups and upgrading is easier.

For more information, see [Create project and firm folders \(page 225\)](#).

Backup

As all valuable information and work your company stores, it is also important to take backups of the model folders, and firm and project settings. If your company has a system for taking automatic scheduled backups, schedule your system to take the backups at night time, outside working hours to prevent any possible conflicts in the model. Do not forget to also take a backup of the license entitlements.

Virus protection

Virus protection software has sometimes caused problems in saving models and drawings to the model folder. These problems may occur especially if you have your model saved on a network drive. We strongly recommend that you add Tekla Structures into the safe list of your antivirus system, and to set up your virus protection in a way that actions in your model folder are not blocked or scanned.

2.10 Create startup shortcuts with customized initializations

You can use shortcuts to start `teklastructures.exe` with customized initializations. You can use this functionality to create shortcuts for different purposes, for example, to have customized setup files depending on the client you are working for in a project. The Tekla Structures installation automatically creates shortcuts for the selected environments.

NOTE We recommend that only administrators create the customization and the necessary shortcuts. Otherwise, your settings may differ from the settings defined for your firm, or for the particular project you are working for.

Create a startup shortcut with customized initialization

1. Open the `user.ini` file using any standard text editor.
2. Save the file with a new name, for example, `customer.ini` or `project.ini`.
3. Modify the file by adding the required settings.
4. Save the modified initialization file.
5. Open the Windows **Start** menu and select **All Programs --> Tekla Structures <version>**.
6. Right-click **Tekla Structures <version>** and select **Copy**.
7. Paste the shortcut to your desktop.
8. Select the shortcut, right-click and select **Properties**.
9. Modify the **Target** of the shortcut by adding the required project initialization information to it.

First enter the path to the current `teklastructures.exe`, then the desired parameters.

Use the quotation marks (") in the path to avoid possible problems if the path contains spaces. If you have installed Tekla Structures to a path that does **not** contain spaces, there will be no problems even if you remove the quotations marks, for example, `C:\TeklaStructures\`. If you have installed Tekla Structures to a path that contains spaces, the quotation marks are needed, for example, `C:\Program Files\Tekla Structures\`.

The maximum length of a shortcut is 256 characters. If you have problems with the length, you can call all other necessary initialization files from your customized initialization file instead of adding them to the shortcut.

10. To override the settings defined in the shortcuts, use the parameter `-i <initialization_file>` in the `user.ini` and `option.ini` files.

Available parameters in shortcuts

You can use the following parameters in shortcuts:

Parameter	Description
<code>-I <ini_file_path></code>	<p>The given <code>.ini</code> file is loaded before the environment <code>.ini</code> files. This parameter can be specified multiple times.</p> <p>This parameter could be used to bypass the Choose Setup dialog (the login dialog).</p> <p>Example:</p> <pre>"C:\Program Files\Tekla Structures\2016\nt\bin\TeklaStructures.exe" -I "C:\ProgramData\Tekla Structures\2016\Environments\usimp\us_roles\engineering\EngBypass.ini"</pre>
<code>-i <ini_file_path></code>	<p>The given <code>.ini</code> file is loaded after the role <code>.ini</code> files. This parameter can be specified multiple times.</p> <p>Example:</p>

Parameter	Description
	"C:\Program Files\Tekla Structures\2016\nt\bin\TeklaStructures.exe" -i "C:\TeklaStructures\MySettings.ini"
<model_path>	The given model is opened after startup. Example: "C:\Program Files\Tekla Structures\2016\nt\bin\TeklaStructures.exe" "C:\TeklaStructuresModels\New Engineering model"
-m <macro_file_path>	The given macro is executed during startup. Example: "C:\Program Files\Tekla Structures\2016\nt\bin\TeklaStructures.exe" -m "c:\ProgramData\Tekla Structures\2016\Environments\usimp\macros\modeling\Directory Browser.cs"

These parameters can be used in combination, and they automatically bypass the **Tekla Structures - Choose setup** dialog box, open a model and run a macro, for example.

```
"C:\Program Files\Tekla Structures\2016\nt\bin\TeklaStructures.exe" -I
"C:\ProgramData\Tekla Structures\2016\Environments\usimp\us_roles
\engineering\EngBypass.ini"
"D:\Models\_TS2016\New Engineering model" -m "c:\ProgramData\Tekla
Structures\2016\Environments\usimp\macros\modeling\Directory Browser.cs"
```

Example of an initialization file

Below is an example of a customized project initialization file that calls other initialization files.

MyProject.ini

```
// The project is based on the default US imperial settings
call c:\ProgramData\Tekla Structures\19.0\environments\usimp\env_usimp.ini
// ..but our company policy requires these changes
call c:\CompanySettings\OurPolicy.ini
// ..and the fabricator requires something
call c:\Fabricators\Fabricator1.ini
// ..and then we let users to make some changes (bg color etc.)
call c:\Users\user_%USERNAME%.ini
```


The project shortcut for this initialization file:

```
C:\Program Files\Tekla Structures\21.0\nt\bin  
\TeklaStructures.exe -i \\MyServer\MyProject\MyProject.ini \  
\MyServer\MyProject\MyModel\MyModel.db1
```

2.11 Using Tekla Structures with application and desktop virtualization

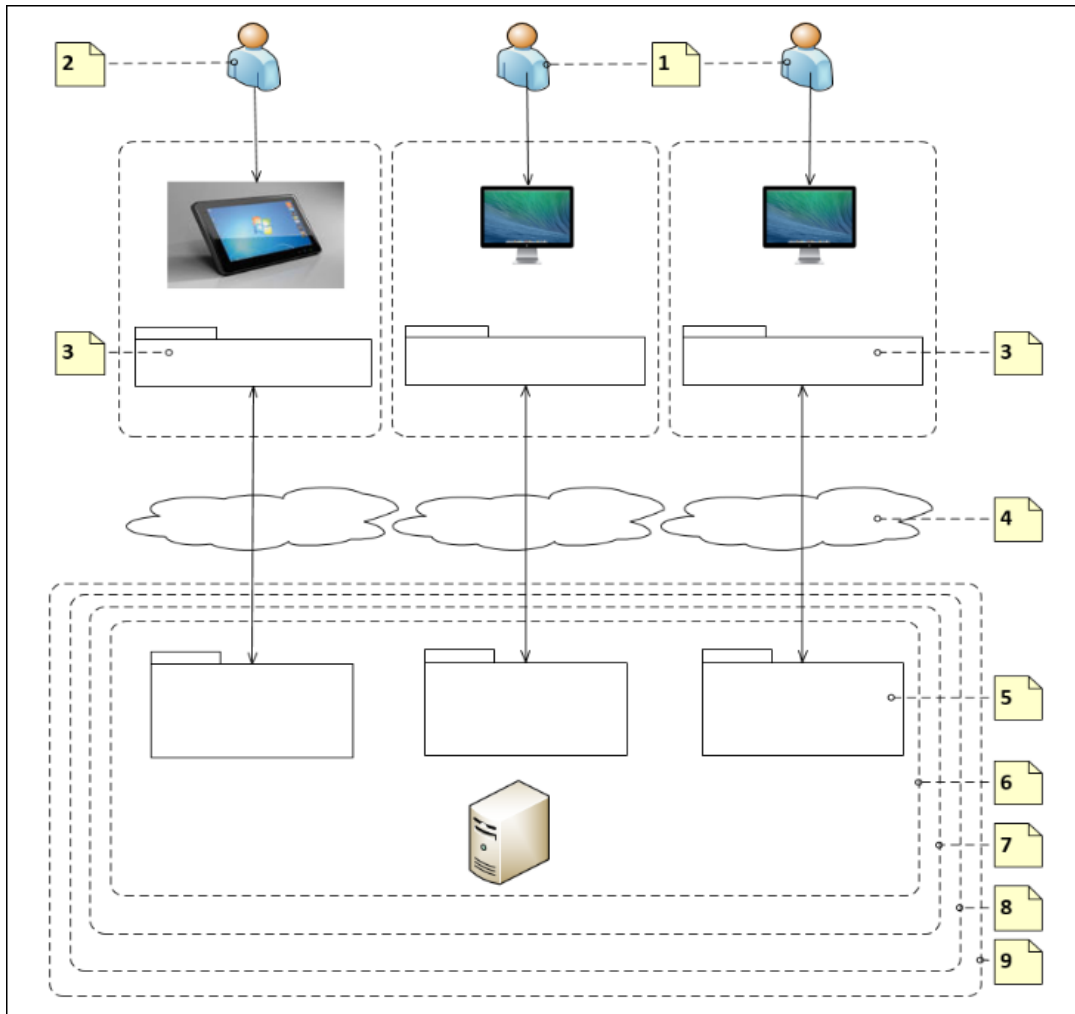
Using Tekla Structures with the Citrix application and desktop virtualization is a flexible and safe way to quickly add users to Tekla Structures projects without locally installing Tekla Structures and copying project data to a user's computer. Citrix application and desktop virtualization products are products of Citrix Systems, Inc.

Using Tekla Structures from a centralized location ensures that all users in the project are using the same project environment set-up. Streaming applications from the server enables the use of Tekla Structures on client computers, tablets and smartphones that have different hardware and software configurations. The project data is protected as everything is stored only on the server.

The key components for using Tekla Structures with the Citrix application and desktop virtualization are:

- Windows server
 - Virtualization solution, such as Citrix XenServer or VMware vSphere
 - Citrix application virtualization or Citrix desktop virtualization solution installed
 - The server is typically set up by the company's IT department.
- User groups, in other words, delivery groups defined on the server
 - Delivery groups are set up by the administrator of the virtualization environment.
- Access rights for delivery groups defined on the server
 - Access rights are set up by the administrator.
- Citrix Receiver installed on client computers
 - The Citrix Receiver is typically delivered through an Internet browser.
- Tekla Structures installed on the server or on the virtual machine running on the server
 - High-end Windows server that can serve multiple concurrent users
- Fast access to project files
- Connection to Tekla Structures license server as each Tekla Structures user needs a valid Tekla Structures license

The image below shows the main concepts in Tekla Structures virtualization.



1	Desktop user
2	Tablet or smartphone user
3	Citrix thin client
4	Secure display data connection over the Internet
5	Tekla Structures instances running on a virtual machine
6	Virtual Windows server OS
7	Virtualization platform (hypervisor layer)
8	Server hardware
9	Data center hosted by the user organization, Trimble, Amazon, or by a third party

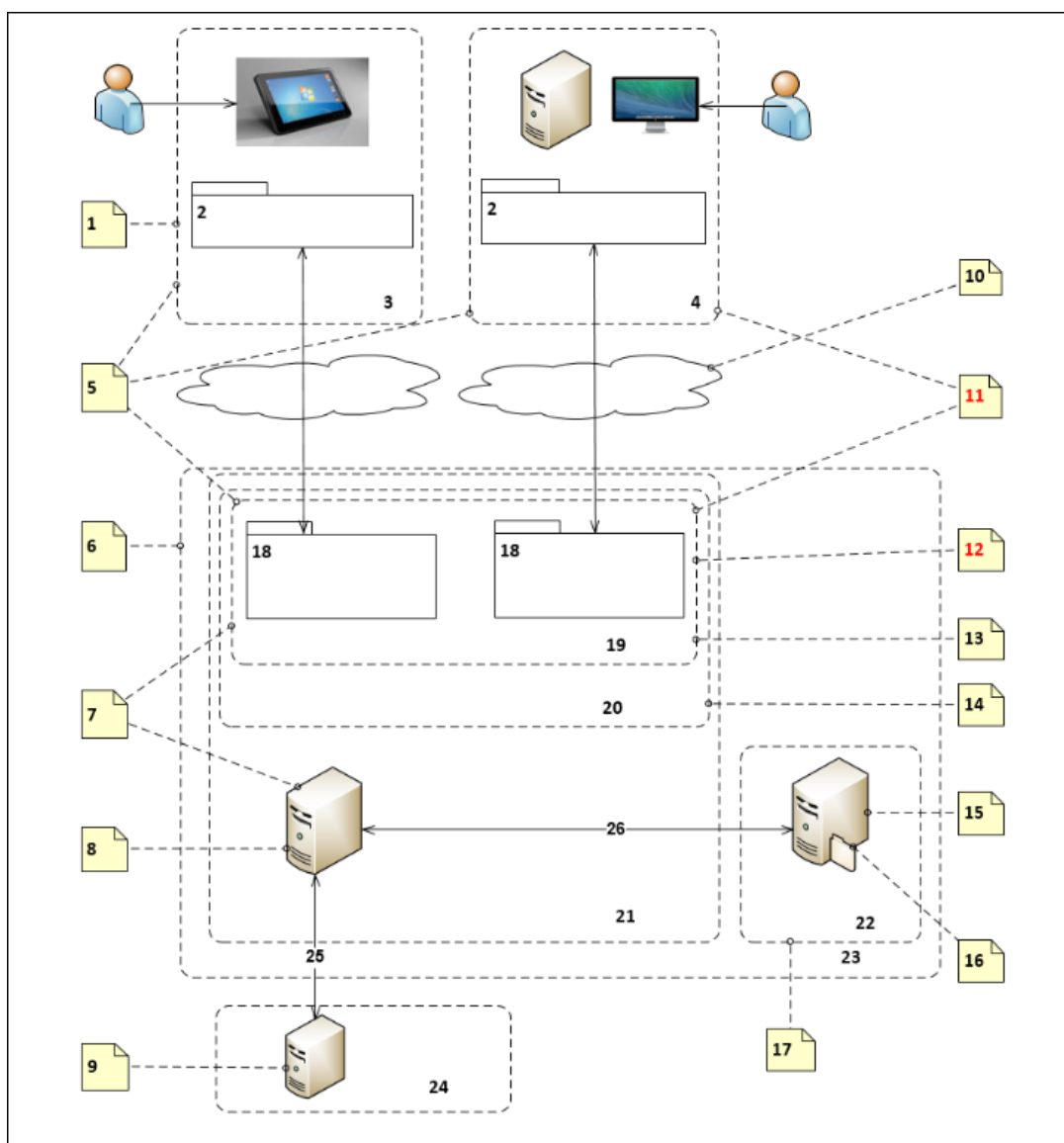
Prerequisites for using Tekla Structures in a virtual environment

Citrix virtualization is set up either on a physical server or on a virtual server. Users and user groups are added, and access rights are defined with Citrix Studio for accessing computing resources on the server.

Recommended hardware is described in [Tekla Structures 2017i Hardware Recommendations](#).

For detailed instructions on installing and setting up XenApp and XenDesktop, see the Citrix documentation.

The image below shows the main components in Tekla Structures virtualization.



1	Citrix XenApp 7.6
---	-------------------

2	Thin client application: Citrix XenApp client or Citrix XenDesktop desktop viewer
3	Tablet / Phone user
4	Desktop user
5	Multiple concurrent clients may share one virtual machine instance
6	Data center hosted by the user organization, Trimble, Amazon, or by a third party
7	A graphics processing unit (GPU) can be dedicated for each virtual machine instance with 0.5 GB to 2 GB of graphics memory, depending on the usage.
8	High-end computer: <ul style="list-style-type: none"> • Fast graphics card, NVIDIA GRID K520 or the newer NVIDIA Tesla GPUs • 8 GB to 16 GB of main memory for each user, depending on the usage • Good CPUs, such as the latest generation of Intel Xeon E5 or E7 families • Windows Server 2012 R2 OS
9	Local, enterprise or cloud Tekla Structures license server. Each <code>TeklaStructures.exe</code> running on the virtual machine needs a valid license.
10	Network bandwidth, 1 Mbps or more
11	Accessing files from the client's local file system may be very slow and should be avoided.
12	Never use the local disk of the virtual server for saving model folders.
13	Citrix XenDesktop 7.6
14	VMware vSphere 6.0 hypervisor
15	File server
16	Normal Windows file system permission handling on the file server
17	Project data including environments should be stored on another (server) machine in the data center or file system inside the company network.
18	Desktop application: Tekla Structures
19	Virtual machine instance
20	Hypervisor
21	Windows server machine hosting the virtual machines
22	Network-attached storage (NAS)
23	Data center
24	Tekla Structures license server (on premises or hosted outside the data center)

25	Get license
26	Read/write project files. Fast disk access is needed.

Set up the virtual environment for Tekla Structures

You need to set up the server, define delivery groups, install the Tekla Structures software and environments on the server, and Tekla Structures users need to install the Citrix Receiver on their computers.

1. Set up the server.

High-end computer with a fast graphics card, such as NVIDIA GRID K520 or the newer NVIDIA Tesla GPUs, for serving multiple concurrent users. There needs to be enough main memory for each user depending on the size and level of detail of the projects they are working on. The server computer needs to have a good CPU and it should be running the Windows Server 2012 R2 operating system.

For detailed instructions on installing and setting up XenApp and XenDesktop, see the Citrix documentation.

2. Install Tekla Structures software and the needed environments on the server.

NOTE Storing models on the virtual computer local disk may cause access problems. Use a dedicated file server for models, and remember to select the correct network location for the model folder during the Tekla Structures installation.

Tekla Structures environment settings are the same for all users that use the same virtual computer. In the same manner as with normal desktop installations, you still have to make sure that the environments on different virtual machines are the same or matching.

We strongly recommend that you use standard Tekla Structures environments and amend them with company or project-specific settings (on the network file server).

3. Install the Citrix Receiver on the Tekla Structures client computer:

We recommend that you use the Citrix Receiver web user interface.

- a. Open the Citrix Receiver web user interface in your web browser.
Use the `https` address provided by your company's administrators.
- b. Install the Citrix Receiver client software by following the steps in the installation wizard. Do not create an account, or login in the installation wizard, but finish the installation and return to the web user interface.

- c. After the installation, return to the Citrix Receiver web user interface and log in with the credentials provided by your company's administrators.
- d. Select the desired virtual desktop. If the virtual desktop does not start automatically, run the downloaded Citrix (.ica) file.

You can now start using Tekla Structures on the virtual desktop, in the same manner as if it was installed on your own computer.

- When you use the virtual desktop for the first time, you can give read and write access to your local files in the file access dialog box.
- Note that referencing local files from your computer directly in Tekla Structures is not recommended. If you need to access those files in Tekla Structures, you should copy them to a shared network location first.
- Note that model folders are not copied to the client computers.

The Citrix Receiver client is updated frequently. Always install the latest client when the web user interface suggests you to do so.

3 Manage licenses

To get started with license administration:

1. Make sure you understand how licensing works, see [Tekla Structures licensing system \(page 31\)](#).
2. Install the license server as explained in [Installing Tekla Structures license server \(page 43\)](#).
3. Make sure the license server can connect to Trimble's activation server and clients can connect to the license server, see [Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#).
4. Activate your licenses on the server as explained in [Activating Tekla Structures licenses \(page 71\)](#).
5. Test that licensing works and connect the clients to the license server as explained in [Connect Tekla Structures to the license server \(page 76\)](#).

Additionally, you can ensure that the correct types of licenses are available to the users who most need them by defining access rights for using and borrowing licenses as explained in [Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#). This can prevent situations where there are no licenses available for users that need them because someone else has reserved or borrowed a license that they do not really need.

When you renew licenses and when you need to make hardware changes on the license server, you must deactivate your licenses as explained in [Deactivating Tekla Structures licenses \(page 82\)](#).

If your licenses have become untrusted or disabled, they cannot be used and you need to repair them. For information about how to do this, see [Repair a Tekla Structures license \(page 84\)](#).

See also

[Troubleshoot Tekla Structures licensing \(page 86\)](#)

3.1 Tekla Structures licensing system

Tekla Structures uses FlexNet Publisher License Management version 11.13 (later on FlexNet) licensing system. FlexNet is a licensing system provided by Flexera Software. The FlexNet licensing system is activation-based, and it supports redundancy via a server list. In an activation-based licensing system you need to activate your licenses to transfer the license rights from Trimble Solutions to your license server.

Tekla Structures cannot be used without a valid license. To get an entitlement certificate, you need to buy a license. If you have problems downloading and installing a commercial version of Tekla Structures, please contact your local Tekla office: <http://www.tekla.com/contact/offices-and-resellers>. There are no trial licenses available.

Tekla Structures holds licenses in trusted storage. This means that Tekla Structures does not support three-server redundancy, where licenses are held in license files. However, you may have any number of license servers, and use search paths for defining and finding them.

Key steps in an activation-based licensing system

In an activation-based licensing system the following tasks need to be performed before users can start using Tekla Structures:

- Install and set up a license server on a computer: [Installing Tekla Structures license server \(page 43\)](#)
- Save the entitlement certificate and activate the licenses: [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#)
- Connect each client computer with Tekla Structures to the license server: [Connect Tekla Structures to the license server \(page 76\)](#)

Benefits from using activation-based licensing

The main benefits of the activation-based FlexNet licensing system:

- You do not need hardware locks or password files.
- You can update and renew licenses easily.
- You can create user groups with different access rights for different Tekla Structures configurations.
- You have multiple options for managing licenses. You do not have to activate all of the licenses on the same license server. You can activate some of the licenses on a common server and the rest locally on each user's computer, for example. You can easily change the location of the licenses by deactivating them on one license server and activating on another.
- You can handle licenses efficiently. You can activate licenses on a license server in a local area network. When you start Tekla Structures, a license is checked out from the license server. When you close Tekla Structures, the license is checked in and it is available for another user.

- You can use Tekla Structures offline by borrowing licenses.

Prerequisites for using FlexNet

There are several issues the administrator needs to take into account before starting with FlexNet licensing. Take a look at the following listings:

- [Checklist of Trimble Solutions deliverables needed in Tekla Structures licensing \(page 33\)](#)
- [Checklist of IT resources needed in Tekla Structures licensing \(page 34\)](#)
- [Checklist for the Tekla Structures license server administrator \(page 35\)](#)
- [Rights needed for performing administrator's tasks in Tekla Structures licensing \(page 35\)](#)

Tekla Campus users

The FlexNet licensing system is not used with Tekla Structures Learning Edition, and FlexNet licensing instructions do not apply. For more information about Tekla Structures Learning Edition, see <https://campus.tekla.com/>

Checklist of Trimble Solutions deliverables needed in Tekla Structures licensing

To get started with the FlexNet licensing, the administrator needs to have the following items provided by Trimble Solutions:

- **Entitlement certificate**

Trimble Solutions has sent the license entitlement certificate in an e-mail to the person in your organization who has made the license purchase, or to someone named as the contact person. The entitlement certificate lists all the Tekla Structures licenses you are entitled to use and includes the activation IDs for entitled licenses.

For entitlement requests, contact your local Tekla Structures representative.

- **Tekla Structures license server installation package**

The Tekla Structures license server installation package is available on [Tekla Downloads](#) product download service. The installation package contains the license server files and **Tekla Structures License Administration Tool**.

- **License Administration Guide**

This guide by Flexera Software is a general guide that contains, for example, instructions on how to create user groups and manage access rights. This guide is provided in the license server installation package and is installed in the folder where you install the license server in the .pdf format.

Checklist of IT resources needed in Tekla Structures licensing

You need to take into account the following IT resource related requirements:

- **Supported operating system**

The FlexNet licensing system for Tekla Structures runs in Windows operating system. The support for virtual servers is limited. For more information, see Tekla Structures [Hardware recommendations](#) in Tekla User Assistance.

- **Windows user account with administrator rights**

Your Windows login user name should not contain any special characters.

You need to have administrator rights to install and manage the license server. For more information, see [Rights needed for performing administrator's tasks in Tekla Structures licensing \(page 35\)](#).

- **TCP/IP port 27007 for license server**

Tekla Structures licensing service (`lmgrd`) is automatically run in the TCP/IP port 27007. This port should be dedicated for Tekla Structures licensing service only. If required, you can manually set a different TCP/IP port for the licensing service, see [Modify the license file tekla.lic manually \(page 49\)](#).

- **Local area network**

The license server and the client computers need to be in the same local area network. The clients need to be able to contact the license server. If there is no local area network in your company, we recommend that you install the license server on each computer that has Tekla Structures and activate one license on each computer.

- **Internal firewall and direct communication**

The internal firewall of your company (for example, Windows Firewall) must allow the communication between the server computer and the computers with Tekla Structures. You must allow the applications `tekla.exe` and `lmgrd.exe` to operate through the firewall. For more information, see [Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#).

Direct communication from the server computer to the Internet needs to be allowed when the license server at your company contacts the activation server at Trimble Solutions. The activation communication uses SOAP over HTTP on the TCP/IP port 80.

Your firewall should not block any incoming or outgoing information during the activation. To allow the activation communication, use the activation server address in your firewall settings:

<http://activate.tekla.com:80/flexnet/services/ActivationService?wsdl>

If direct communication from the server computer to the Internet is not allowed, contact your local Tekla Structures support for manual activation.

- **System backup settings**

If you have an automatic backup and restore system in your company, configure your system so that it does not overwrite your actual Trusted Storage with the backup copy. Trusted Storage is the place where the licensing information is stored on the server computer, and it is located in `C:\ProgramData\FLEXnet` depending on the operating system.

Checklist for the Tekla Structures license server administrator

Your company or organization should assign an administrator for the license server. The license server administrator's primary responsibilities are:

- Install the Tekla Structures license server: [Installing Tekla Structures license server \(page 43\)](#)
- If automatic installation is not possible, manually install and configure Tekla Structures license server: [Install Tekla Structures license service - manual installation \(page 46\)](#), [Configure Tekla Structures license server manually \(page 50\)](#), [Modify the license file tekla.lic manually \(page 49\)](#)
- Save the entitlement certificate on the license server computer and activate licenses on the server to make the licenses available for Tekla Structures users, or for yourself, if the license server is installed on your own computer: [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#)
- Inform users of the license server name and port number so that they can connect Tekla Structures to the server: [Connect Tekla Structures to the license server \(page 76\)](#)
- If necessary, modify the firewall settings to allow licensing traffic: [Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#)
- If necessary, modify license access rights in the `tekla.opt` options file: [Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#)
- Export a customized product ID files for license borrowing and deliver them to offline users: [Provide offline users with a customized product ID file \(page 111\)](#)
- Inform users of the license policy of the company and monitor license use.

Rights needed for performing administrator's tasks in Tekla Structures licensing

You need to have Windows administrator rights to install and manage the license server. Some applications also need to be run as administrator separately. This depends on the Windows version you are using.

- In **Windows 7, Windows 8/8.1** and **Windows 10**, you need to log in as administrator. In some cases, you need to run applications as administrator. To do this, go to the folder containing the application, right-click the application and select **Run as administrator** from the pop-up menu.
- In **Windows Server** you need to log in as administrator. In some cases, you need to run applications with *unrestricted rights*. To do this, right-click the application, select **Run as**, and clear the **Run this program with restricted access** check box.

Distributing and managing Tekla Structures licenses

The FlexNet licensing system offers several options for distributing licenses to users. The way you distribute the licenses depends on the size of the company or organization, and the amount of Tekla Structures users.

There are two basic ways of distributing licenses to users:

- The licenses are available for multiple users on a common license server.
- The licenses are activated on each user's own computer.

You can also use a combination of license distribution methods. For example, you can activate one license on a separate computer and activate the rest of your licenses on a common license server.

The following table shows what is typical for managing the licenses that are activated separately on each computer, and for licenses that are activated on a common license server.

Licenses are activated on user's own computer	Licenses are activated on a common license server
No need for an assigned license server administrator. Each user manages the license server that is installed on the user's own computer.	Centralized maintaining and administration of licenses is needed. A license server administrator maintains the license server and manages the license use. Typically, there are a few Tekla Structures main users in a company. The main users are good candidates for license server administrators,

Licenses are activated on user's own computer	Licenses are activated on a common license server
	because they are already familiar with Tekla Structures. For more information on the responsibilities of the license server administrator, see Checklist for the Tekla Structures license server administrator (page 35)
No need to manage license access rights. Each user activates only the licenses that are needed.	By default, all license configurations activated on the server are available for all Tekla Structures users. However, centralized access rights management is possible. The license server administrator can give different users access to different configurations. The license server administrator needs to modify the <code>tekla.opt</code> options file to manage the license access rights. For more information on managing license access rights, see Modify Tekla Structures license access rights (tekla.opt) (page 77) .
Tekla Structures can be used out of office. If the user's license is activated on a computer, license borrowing or a VPN connection is not needed.	Tekla Structures can be used out of office. A user needs to borrow a license from the common license server or use a VPN connection to the license server to use Tekla Structures out of office.
Licenses are used only by one person. Users have access only to the licenses that are activated on their own computer. If a user needs a license that is activated on another computer, the user needs to use the other computer. Another option is to deactivate licenses on one computer and activate them on another, which requires effort.	Licenses are checked out frequently by several users. When the licenses are activated on a common server, they are available for multiple users. The licenses are checked out from the license server only when they are needed. When a user does not need a license, the user closes Tekla Structures and the license becomes available for another user. Switching from using one license to another is simple.
	Rules of license usage Tekla Structures users should accept common rules or an internal company policy. The rules should contain regulations of managing the

Licenses are activated on user's own computer	Licenses are activated on a common license server
	licenses, for example, who is allowed to borrow licenses. Usage of common rules minimizes the amount of conflicts in license management.

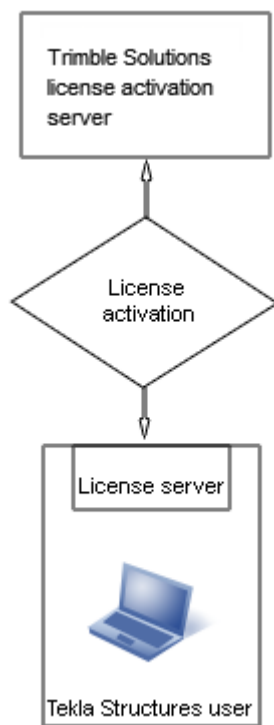
Examples of different Tekla Structures licensing system setups

The purpose of the following examples is to provide guidelines for license management in companies or organizations of different sizes.

Example 1: One Tekla Structures user, all licenses activated on one computer

Only one user in the company uses Tekla Structures. The user installs Tekla Structures and the license server on the same computer.

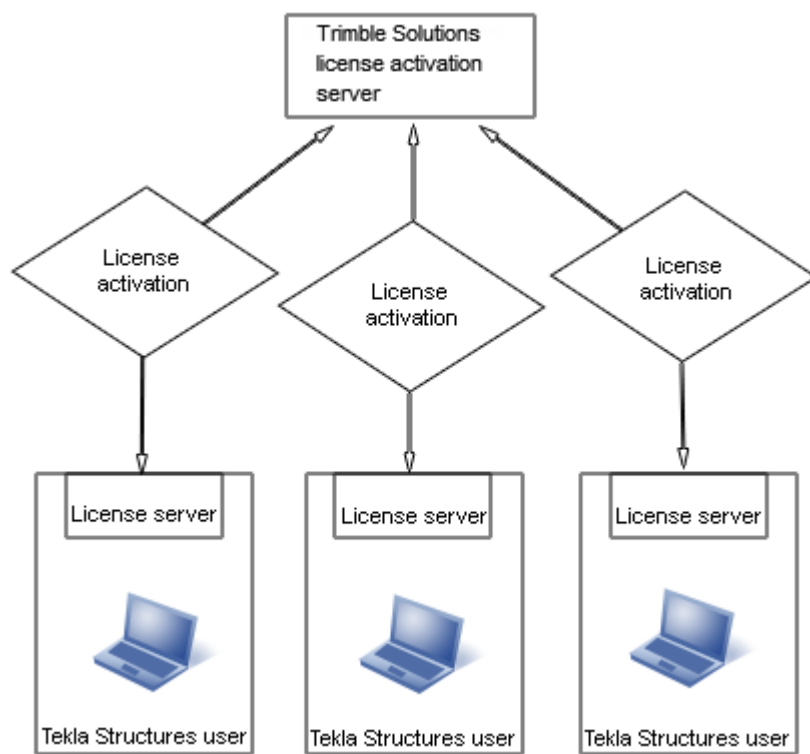
- Installing the license server is straightforward, and the default license server settings can be used. The user does not need to modify the license server settings, because the user runs the license server and Tekla Structures on the same computer.
- Because the user installs the license server on a computer, the user does not need to borrow a license or use a VPN connection to use Tekla Structures out of office.



Example 2: Three Tekla Structures users, necessary licenses activated separately on each computer

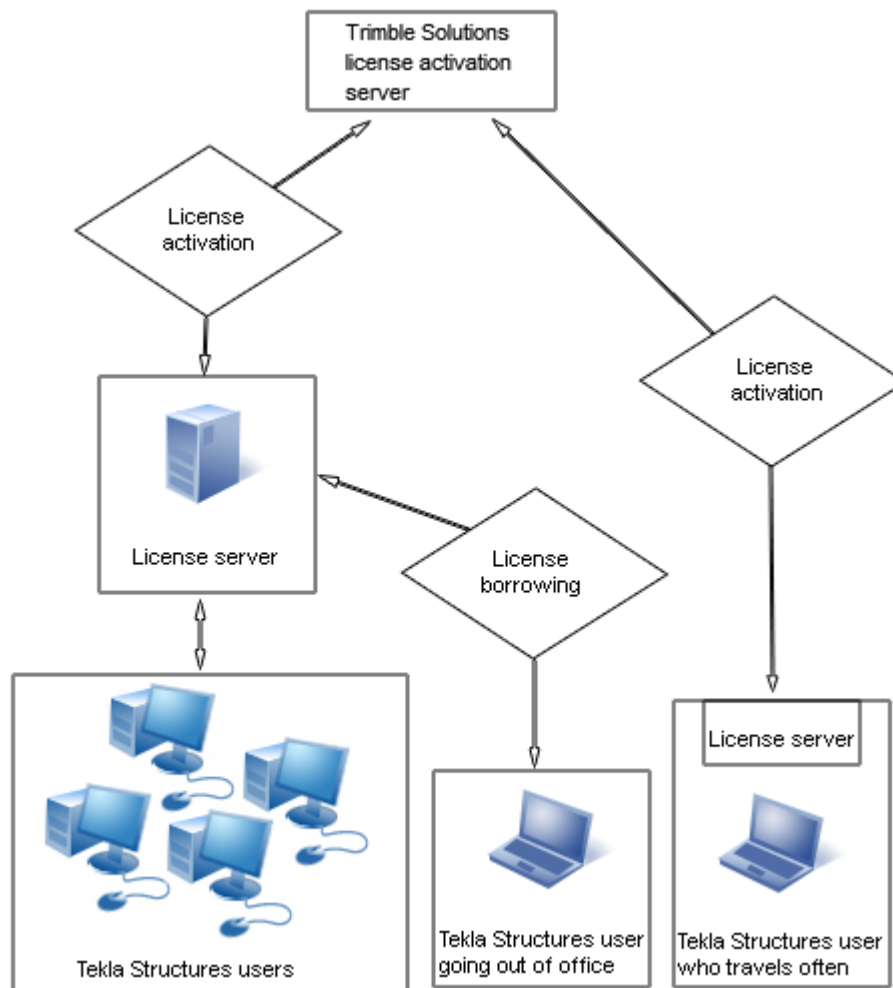
There are three Tekla Structures users in a company. Because the users use different Tekla Structures configurations, each user installs a license server separately on the user's own computer and activates only the needed licenses.

- A license server administrator is not needed, the users maintain their license servers.
- Because the users install the license servers on their computers, they do not need to borrow a license or use a VPN connection to use Tekla Structures out of office.



Example 3: Ten Tekla Structures users, necessary licenses activated on a common license server and one user's computer

There are ten Tekla Structures users in a company



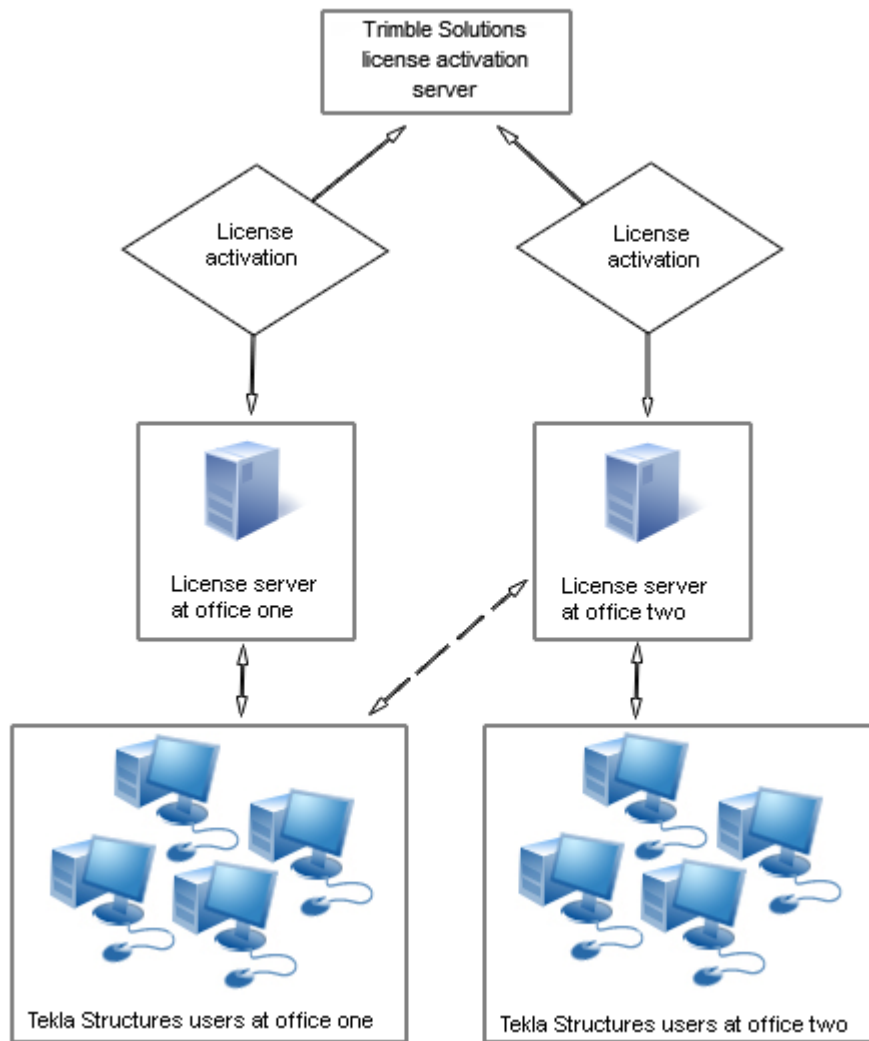
Because the users use different configurations, the company uses a common license server.

- The company has an internal policy for license use containing regulations for managing the licenses.
- One of the main users is assigned as the license server administrator. The administrator installs the license server and informs the other users of the hostname and port number of the server. The license server administrator also performs other server maintenance duties.
- One of the users travels a lot and needs Tekla Structures on the journeys. A license server is installed separately on the user's computer, so the user does not need to borrow a license or use a VPN connection for offline use of Tekla Structures.
- Other users borrow licenses from the license server when they need to use Tekla Structures offline.

Example 4: Fifty Tekla Structures users in two offices, necessary licenses activated on two separate servers

There are fifty Tekla Structures users in two separate offices. Both offices have their own license servers.

- Both offices have assigned license server administrators. The license server administrators install the license servers and perform license server maintenance duties.
- The company has an internal policy for using licenses. The policy contains, for example, the rules that define who is allowed to borrow licenses.
- Because the amount of Tekla Structures users is large, the license server administrators create `tekla.opt` options files for controlling the access rights for different licenses.
- Only a couple of users need to use Tekla Structures offline. The license server administrators modify the option files to enable the license borrowing only for those users who need to borrow licenses.
- If one server fails, the users can connect to the license server at the other office. If there are licenses available on the license server, the users can use the licenses.



3.2 Installing Tekla Structures license server

The Tekla Structures license server installation package contains license server files, applications for license management and guides. To install the license server software, download the license server installation package with the latest updates from [Tekla Downloads](#) product download service.

You have two choices in installation:

- **Automatic default installation:** Select automatic installation for normal setup. Automatic installation is recommended.

For detailed installation instructions, see [Install Tekla Structures license server - automatic installation \(page 45\)](#).

- **Manual installation:** Use manual installation if you need to separately install the license server, modify the license file, configure the license service, and start the server software. This is needed if you want to use another TCP/IP port than the one used in the automatic installation, for example. Use manual installation only if you are an advanced user of FlexNet or Flexlm licensing.

For detailed installation instructions, see [Install Tekla Structures license service - manual installation \(page 46\)](#).

Before installing Tekla Structures license server

- Install the license server using administrator's rights.
- Turn off the internal firewall and pause the antispyware/antivirus protection.
- Ensure that you have access to the Internet. The Internet connection is needed during the license activation process. An unreliable connection speed may cause errors.
- If you are using other FlexNet licensing services, you need to stop them before you install the Tekla Structures license server. When you have completed installing the Tekla Structures license server, you can restart the other licensing services.

See also

[Problems in Tekla Structures license server installation and connecting to the license server \(page 87\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[Activating Tekla Structures licenses \(page 71\)](#)

[Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#)

Which license server version to use

Check the table below to see which license server version to use with your current Tekla Structures version. Also check if you need to upgrade to a new service pack or progress release.

Tekla Structures version	License Server 2016 SP1	License Server 2017
2018		✓
2017i - all versions		✓
2017 - all versions	✓	✓

Tekla Structures version	License Server 2016 SP1	License Server 2017
2016i - all versions	✓	✓
2016 SP5/PR5 or later	✓	✓
2016 up to SP4/PR4	✓	Upgrade to 2016 SP5/PR5 or later
21.1 SR7 or later	✓	✓
21.1 up to SR6	✓	Upgrade to 21.1 SR7 or later
21.1 all PV versions	✓	✓
21.0 or earlier	✓	✓

For instructions on how to install the license server, see [Install Tekla Structures license server](#).

Install Tekla Structures license server - automatic installation

Before you start license server installation, stop FlexNet licensing services and other licensing services.

For more information about which license server version to use, see [Which license server version to use \(page 44\)](#).

To install the default setup of the Tekla Structures license server to a computer that does not have a previous version of Tekla Structures license server installed:

1. Download the license server installation package with the latest updates from [Tekla Downloads](#) product download service.
2. Select the installation language.
3. Select **Automatic** as the licensing service installation type to install the default setup.
4. Select the folder where you want to install the license server and complete the installation.

Tekla Structures license server is installed.

In automatic license server installation, the license server address is automatically set to `27007@your_hostname`, where `27007` is the port and `your_hostname` is the computer name/hostname. `27007@your_hostname` is used as the license server address in every Tekla Structures installation.

When you have installed the license server, you need to do the following:

- Save the entitlement certificate and activate the licenses. For more information, see [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#).
- Connect Tekla Structures to the license server. For more information, see [Connect Tekla Structures to the license server \(page 76\)](#).
- You can also change the language of the user interface in **Tekla Structures License Administration Tool** by opening the tool and clicking **Language**.

See also

[Install Tekla Structures license service - manual installation \(page 46\)](#)

[Problems in Tekla Structures license server installation and connecting to the license server \(page 87\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Install Tekla Structures license service - manual installation

Use manual installation if you want to separately install the license server, modify the license file, configure the license server, and start the license server software. In manual installation of Tekla Structures license server, you also install two files: `installanchorservice.exe` and `uninstallanchorservice.exe`. You need these files when you manually install or uninstall FlexNet Licensing Service.

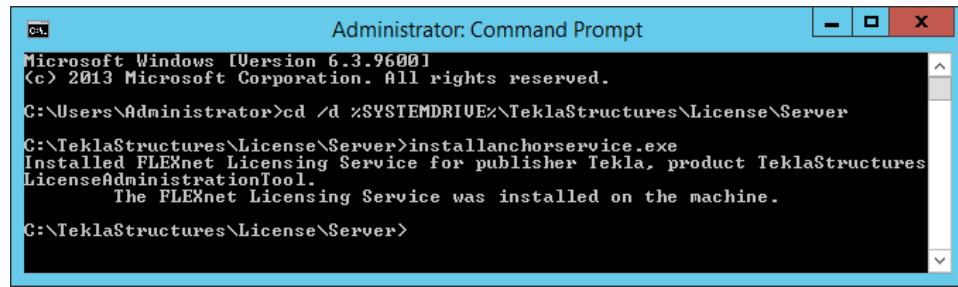
For example, you need to install the license server manually if the default TCP/IP port 27007 is already in use by other services or applications, and you need to define another port in the license file `tekla.lic`.

Before you start license server installation, stop other FlexNet licensing services.

To install the license server manually:

1. Download the license server installation package with the latest updates from [Tekla Downloads](#) product download service.
2. Select the installation language.
3. Select **Manual** as the licensing server installation type and complete the installation.
4. Go to the **Start** menu or **Start screen** (depending on your Windows operating system) and open **Command Prompt** as administrator.
5. At the command prompt, enter the following commands:
 - a. `cd /d %SYSTEMDRIVE%\TeklaStructures\License\Server`
 - b. `installanchorservice.exe`

The licensing server is installed.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>cd /d %SYSTEMDRIVE%\TeklaStructures\License\Server

C:\TeklaStructures\License\Server>installanchorservice.exe
Installed FLEXnet Licensing Service for publisher Tekla, product TeklaStructures
LicenseAdministrationTool.
The FLEXnet Licensing Service was installed on the machine.

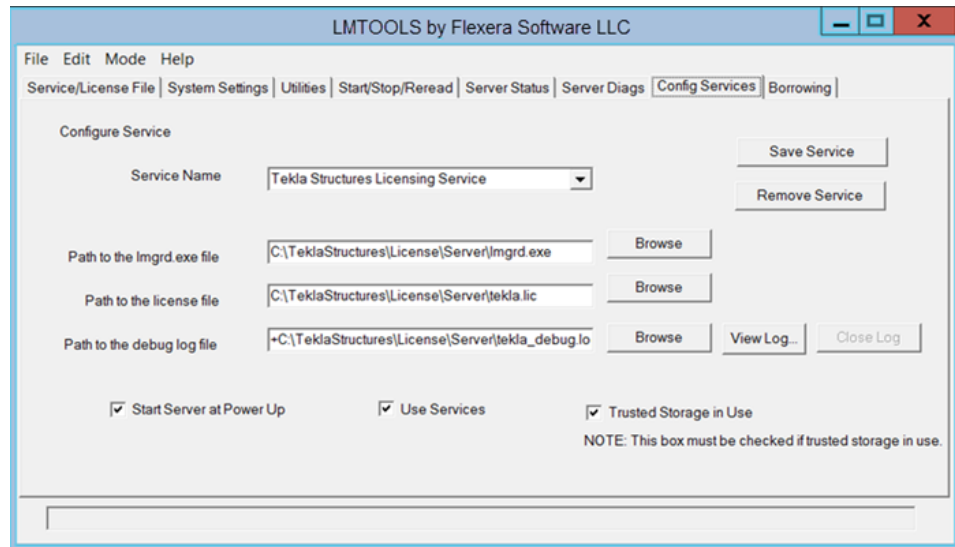
C:\TeklaStructures\License\Server>
```

6. Modify the license file to include the hostname or IP address of the server, and the correct TCP/IP port:
 - a. Open the `..\TeklaStructures\License\Server` folder on the server computer.
 - b. Open the `tekla.lic` (license file) file with a text editor.
 - c. Replace text `localhost` on the line `SERVER localhost ANY` with the hostname (computer name) or IP address of the license server.
 - d. Enter the TCP/IP port number after text `SERVER server_hostname ANY`.
 - e. Save the changes and close the text editor.
7. Go to **Tekla Structures Licensing** --> **LMTTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
8. On the **Service/License File** tab, click **Configuration using Services**.
9. On the **Config Services** tab to configure the licensing service:
 - a. In the **Service Name** box, enter the name of the service exactly as follows: `Tekla Structures Licensing Service`.
 - b. Click the **Browse** buttons to locate the `lmgrd.exe` (license server manager), `tekla.lic` and `tekla_debug.log` files.

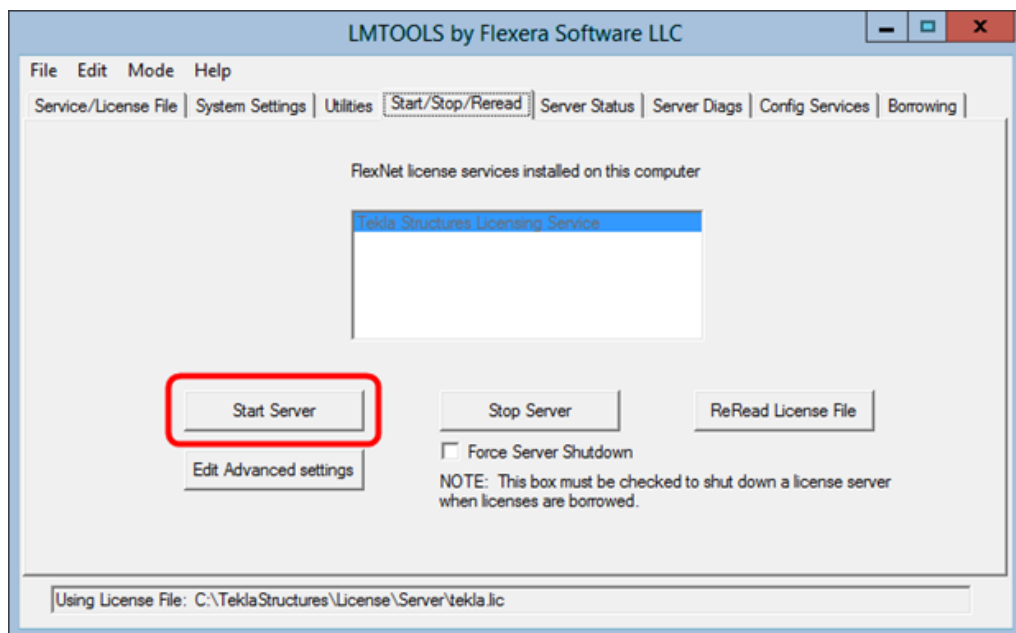
By default, `lmgrd.exe`, `tekla.lic` and `tekla_debug.log` are located in the `C:\TeklaStructures\License\Server` folder.

Note that if you set **Path to the debug log file** outside the "`C:\ProgramData\...`" folder, you get an error message: "Windows preferred path <SystemDrive>\ProgramData to store service data is not set." This error message can be ignored.
 - c. Select the **Use Services** check box to run the licensing service as a Windows service.
 - d. Select the **Start Server at Power Up** check box to start the licensing service automatically after Windows startup.
 - e. Select the **Trusted Storage in Use** check box. This should always be selected for **Tekla Structures Licensing Service**.

- f. Click **Save Service** to save the settings.



10. Go to the **Start/Stop/Reread** tab and click **Start Server** to start the license server.



11. Go to the **Server Status** tab and click **Perform Status Enquiry**.

In the status list, the line `License server status` shows the TCP/IP port and hostname of the license server.

Now you can activate the licenses and connect Tekla Structures to the license server.

You can also change the language of the user interface in **Tekla Structures License Administration Tool** by opening the tool and clicking **Language**.

See also

[Modify the license file tekla.lic manually \(page 49\)](#)

[Activate Tekla Structures licenses using automatic server notification \(page 72\)](#)

[Configure Tekla Structures license server manually \(page 50\)](#)

[Problems using LMTOOLS in Tekla Structures licensing \(page 97\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Modify the license file tekla.lic manually

If you selected the **Automatic** installation option, the license server is set to your hostname: `27007@server_hostname (port@hostname)`.

The licensing system automatically searches for an available TCP/IP port and uses the first available port detected. The **Automatic** installation sets the port to 27007.

You need to modify the `tekla.lic` license file if you:

- Select the **Manual** license server installation option
- Want to change the TCP/IP port of the licensing server
- Want to use the IP address of your computer instead of the hostname

To modify the license file `tekla.lic` manually:

1. Go to the `..\TeklaStructures\License\Server` folder on the server computer.
2. Open the `tekla.lic` file in a text editor.
3. Make the necessary changes:
 - To use hostname or IP address: Replace text on the first line between words `SERVER` and `ANY` with the hostname or IP address of your license server.

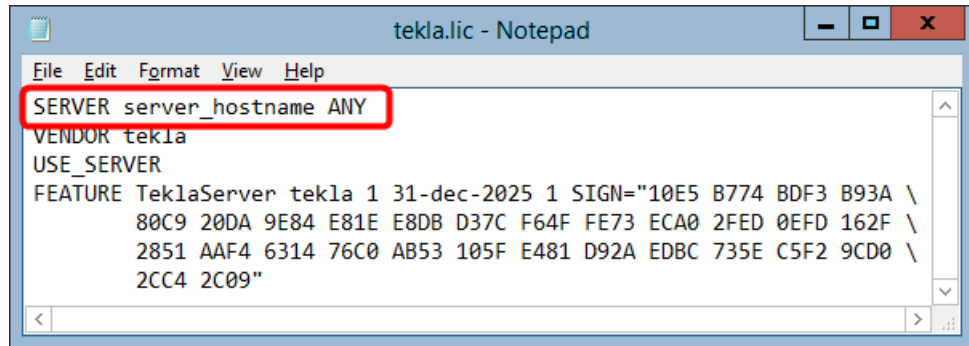
Do not delete texts `SERVER` and `ANY` when you enter the hostname or IP address of the license server.

The following formats are valid:

Hostname: `server_hostname`

Domain name: `server_hostname.mycompany.com`

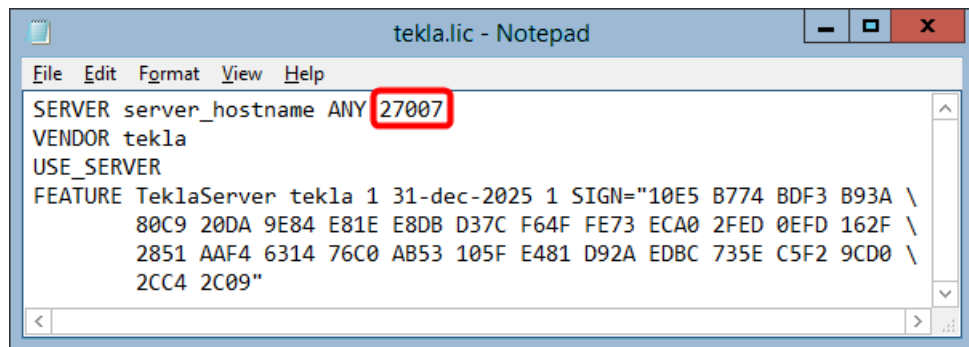
IP address: `10.0.0.12`



You can check the hostname of the license server in **LMTOOLS** on the **System Settings** tab. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.

- To set the TCP/IP port manually: Enter the TCP/IP port number **after** text `SERVER server_hostname ANY`.

The port number can be any free port in the range of 0 - 64000.



4. Save the changes and close the text editor.
5. Restart the Tekla Structures Licensing Service in **LMTOOLS** or Windows Services for the changes to take effect.

See also

[Install Tekla Structures license service - manual installation \(page 46\)](#)

Configure Tekla Structures license server manually

If you encounter problems during the Tekla Structures license server installation, the license server may not start automatically. If this happens, you need to configure the license server manually using **LMTOOLS**.

To configure the Tekla Structures license server manually:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system. Start **LMTOOLS** with administrators rights.

2. Go to the **Service/License File** tab and select **Configuration using Services**.

3. Go to the **Config Services** tab and do the following:

Service Name: Select the licensing service. When working with Tekla Structures license server, always select **Tekla Structures Licensing Service**.

Path to the lmgrd.exe: Click **Browse** and locate `lmgrd.exe`. This file is by default located in the `C:\TeklaStructures\License\Server` folder.

Path to the license exe: Click **Browse** and locate `tekla.lic`. This file is by default located in the `C:\TeklaStructures\License\Server` folder.

Path to the debug log file: Click **Browse** and locate `tekla_debug.log`.

This file is by default located in the `C:\TeklaStructures\License\Server` folder.

To append the logging entries in the debug log file, start the debug log file name path with the plus sign (+), like by default for `tekla_debug.log`. If the plus sign is missing, the log file will be rewritten each time the service is started.

Note that if you set **Path to the debug log file** outside the "`C:\ProgramData\...`" folder, you get an error message: "Windows preferred path <SystemDrive>\ProgramData to store service data is not set." This error message can be ignored.

Use Services: Select the check box to run the licensing service as a Windows service.

Start Server at Power Up: Select the check box to start the licensing service automatically after Windows startup.

Trusted Service in Use: Always select this check box for **Tekla Structures Licensing Service**.

4. Click the **Save Service** button to save the settings.
5. Go to the **Utilities** tab and do the following:

Vendor Name: Enter `tekla` (all letters lowercase).

Path: Enter the name of the license server.

- If you run the license server and Tekla Structures on the same computer, enter `@localhost`. You can also enter the TCP/IP port, for example, `27007@localhost`.
 - If you run the license server and Tekla Structures on separate computers, enter the hostname of the license server, for example, `@server_hostname`.
 - You can also enter the TCP/IP port of the license server, for example, `27007@server_hostname`. You must define the port if you use another port than the default port.
 - You can also enter several license servers. Separate the server names with a semicolon. For example, `27007@server_hostname; 27007@localhost`.
6. Click the **Override Path** button to replace the existing license servers displayed in the status list on the **Server Status** tab.
 7. Go to the **Start/Stop/Reread** tab and start the license server by clicking **Start Server**.

The status bar should display a message telling that server start was successful.

8. Go to the **Server Status** tab and enquire the license server status by clicking **Perform Status Enquiry**.

The status list displays the TCP/IP port and hostname of the license server. The list should indicate that license server is up and vendor daemon `tekla` is up. The list also displays all the activated licenses on the server.



See also

[Installing Tekla Structures license server \(page 43\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

3.3 Allowing Tekla Structures license server to operate through Windows Firewall

When you set up Tekla Structures license server in your network, you may also need to configure the firewall and antivirus settings:

- You need to allow the applications `tekla.exe` and `lmgrd.exe` to operate through the firewall on the license servers and on the client computers.
- The internal firewall at your company must allow the communication between the license server computer and the computers with Tekla Structures.
- In addition to allowing the exceptions in your actual firewall, you may need to configure exceptions for Windows Firewall. Windows Firewall may be set on without you being aware of it, because some Windows updates may automatically turn on the Windows Firewall.

For instructions on how to modify the firewall settings so that the Windows Firewall on the license server allows Tekla Structures licensing traffic, see:

- [Allow exceptions in firewall for lmgrd.exe and tekla.exe: Windows Server 2008 \(page 53\)](#)
- [Allow exceptions in firewall for lmgrd.exe and tekla.exe: Windows 7, 8, 8.1, 10 and Windows Server 2012 \(page 56\)](#)
- [Allow traffic in fixed TCP/IP ports: Windows Server 2008 \(page 57\)](#)
- [Allow traffic in fixed TCP/IP ports: Windows 7, 8, 8.1, 10 and Windows Server 2012 \(page 62\)](#)

In addition to Windows Firewall, the information given also applies to firewalls from other vendors.

Allow exceptions in firewall for lmgrd.exe and tekla.exe: Windows Server 2008

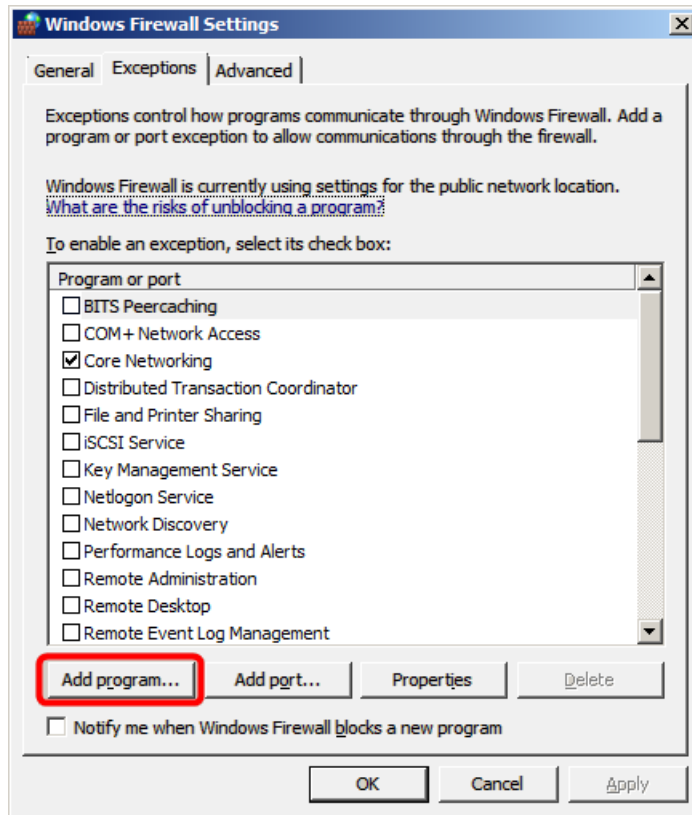
You need to allow the applications `tekla.exe` and `lmgrd.exe` to operate through the firewall on the license server computer to enable licensing traffic. The instructions apply to Windows Server 2008.

To allow exceptions for `lmgrd.exe` and `tekla.exe`:

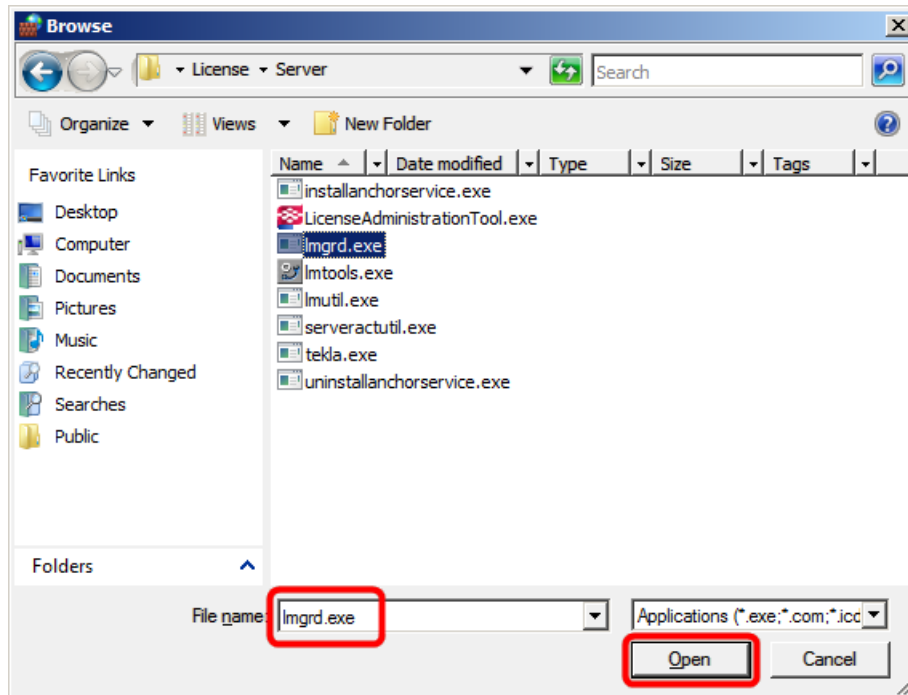
1. On your server computer, go to **Start --> Control Panel --> Windows Firewall**.
2. Click **Allow a program through Windows Firewall** in the left pane.
3. On the **General** tab, make sure that you have **not** selected the **Don't allow exceptions** or **Block all incoming connections**, depending on your Windows operating system.

If you have selected the check box, the modifications do not take effect.

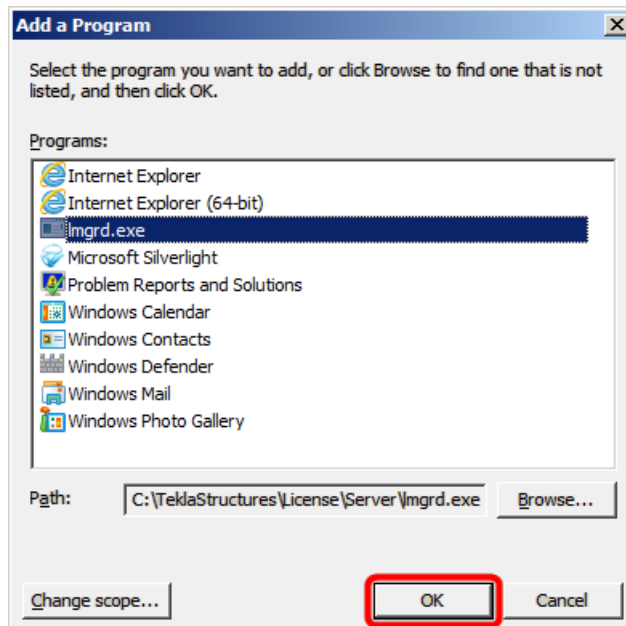
4. On the **Exceptions** tab, click **Add program** to open the **Add a Program** dialog box.



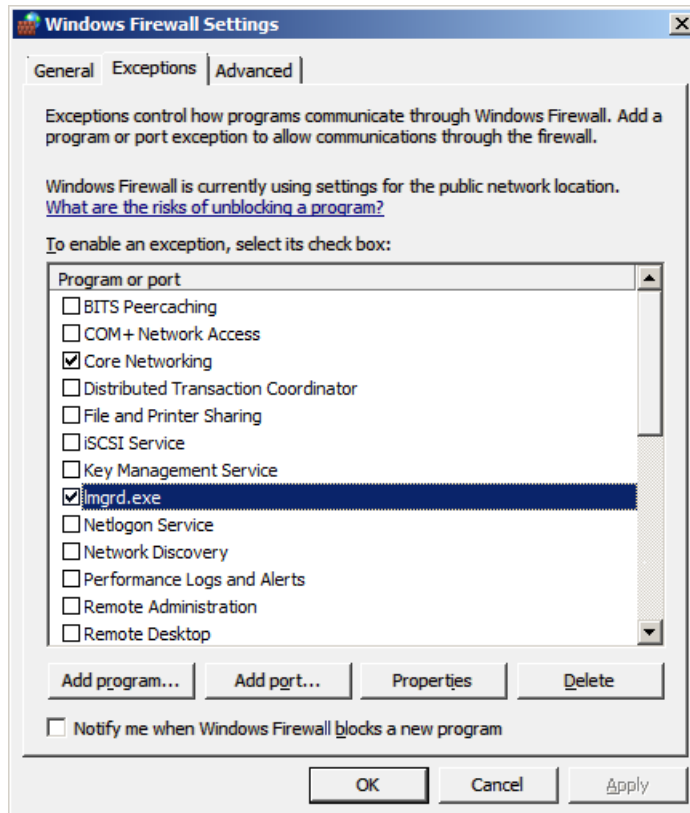
5. In the **Add a Program** dialog box, click **Browse** and browse for the **Server** folder.
By default, the path is ... \TeklaStructures\License\Server.
6. In the **Server** folder, select `lmgrd.exe`.



7. Click **Open** to add `lmgrd.exe` to the program list in the **Add a Program** dialog box.
8. In the **Add a Program** dialog box, ensure that `lmgrd.exe` is selected, and click **OK**.



The `lmgrd.exe` application is added to the list of exceptions.



9. To allow the exceptions also for `tekla.exe`, repeat the steps 3 – 7.
10. Click **OK** to confirm the changes.

Allow exceptions in firewall for `lmgrd.exe` and `tekla.exe`: Windows 7, 8, 8.1, 10 and Windows Server 2012

You need to allow the applications `tekla.exe` and `lmgrd.exe` to operate through the firewall on the license server computer to enable licensing traffic. The instructions below apply to Windows 7, 8, 8.1, 10 and Windows Server 2012.

To allow exceptions for `lmgrd.exe` and `tekla.exe` on the license server computer:

1. Press the **Windows logo key + R** on your keyboard to show the **Run** dialog box, then type `firewall.cpl` and press **Enter**.
2. In the left pane, click **Allow a program or feature through Windows Firewall** or **Allow an app or feature through Windows Firewall** (depending on the operating system).

3. In **Allowed programs** or **Allowed apps** (depending on the operating system), click **Change settings**.
Administrator permission is required. If you're prompted for an administrator password or confirmation, enter the password or confirm.
4. Click **Allow another program** or **Allow another app** (depending on the operating system).
5. Click **Browse** to browse for the `\Server` folder on the computer, select `lmgrd.exe` and click **Open**.
By default, the path is `...\TeklaStructures\License\Server`.
6. Click **Add** to add `lmgrd.exe` to the **Allowed programs** or **Allowed apps** and features list (depending on the operating system).
7. Select both **Home/Work (Private)** or **Private** (depending on the operating system) and **Public** check boxes next to `lmgrd.exe`.
8. Allow the exceptions also for `tekla.exe` by repeating the steps 4 – 7.
9. Click **OK** to confirm the changes.

See also

[Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#)

Allow traffic in fixed TCP/IP ports: Windows Server 2008

You need to modify the firewall settings to allow traffic through fixed TCP/IP port. The following instructions apply to Windows Server 2008.

To allow traffic in fixed TCP/IP ports in Windows Server 2008 on the license server computer:

1. Ensure that no other software or service is using the ports that you are about to set fixed.
Use the command line command `netstat -anp TCP` to find out which ports are in use.
The numbers in the **Local Address** column after the colon (:) are the port numbers that are in use.

```

C:\Documents and Settings\Administrator>netstat -anp TCP

Active Connections

Proto Local Address           Foreign Address         State
TCP   0.0.0.0:135              0.0.0.0:0               LISTENING
TCP   0.0.0.0:445              0.0.0.0:0               LISTENING
TCP   0.0.0.0:1025             0.0.0.0:0               LISTENING
TCP   0.0.0.0:1044             0.0.0.0:0               LISTENING
TCP   0.0.0.0:27007            0.0.0.0:0               LISTENING
TCP   0.0.0.0:47001            0.0.0.0:0               LISTENING
TCP   127.0.0.1:1046           127.0.0.1:1047          ESTABLISHED
TCP   127.0.0.1:1047           127.0.0.1:1046          ESTABLISHED
TCP   127.0.0.1:1048           127.0.0.1:27007          ESTABLISHED
TCP   127.0.0.1:27007          127.0.0.1:1048          ESTABLISHED
TCP   192.168.24.195:135       192.168.24.195:1026     ESTABLISHED
TCP   192.168.24.195:139       0.0.0.0:0               LISTENING
TCP   192.168.24.195:1026     192.168.24.195:135      ESTABLISHED
TCP   192.168.24.195:1045     192.168.24.195:27007    TIME_WAIT

```

2. Browse for `tekla.lic`, and open it using a text editor.
By default, the path is `..\TeklaStructures\License\Server`.
3. To set a fixed port for `lmgrd.exe`, enter the TCP/IP port number at the end of the `SERVER` row.

The **Automatic** installation option sets the port to 27007.

```

tekla.lic - Notepad
File Edit Format View Help
SERVER WIN2K3SRV1 ANY 27001
VENDOR tekla
USE_SERVER
FEATURE TeklaServer tekla 1 31-dec-2025 1 SIGN="10E5 B774 BDF3 B93A \
80C9 20DA 9E84 E81E E8DB D37C F64F FE73 ECA0 2FED 0EFD 162F \
2851 AAF4 6314 76C0 AB53 105F E481 D92A EDBC 735E C5F2 9CD0 \
2CC4 2C09"

```

4. Enter the text `port=free_port` at the end of the `VENDOR` row, for example, `port=1234`.

```

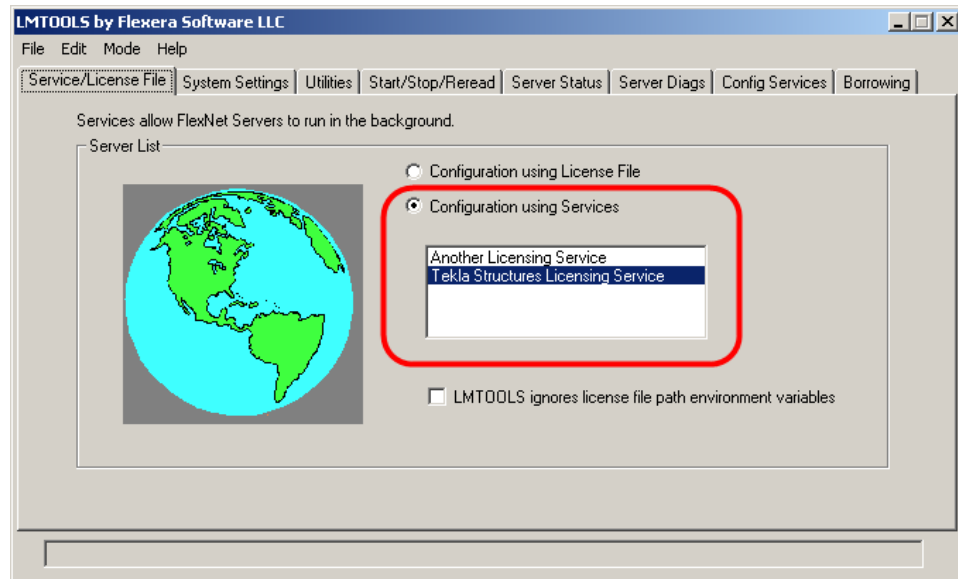
tekla.lic - Notepad
File Edit Format View Help
SERVER WIN2K3SRV1 ANY 27001
VENDOR tekla port=1234
USE_SERVER
FEATURE TeklaServer tekla 1 31-dec-2025 1 SIGN="10E5 B774 BDF3 B93A \
80C9 20DA 9E84 E81E E8DB D37C F64F FE73 ECA0 2FED 0EFD 162F \
2851 AAF4 6314 76C0 AB53 105F E481 D92A EDBC 735E C5F2 9CD0 \
2CC4 2C09"

```

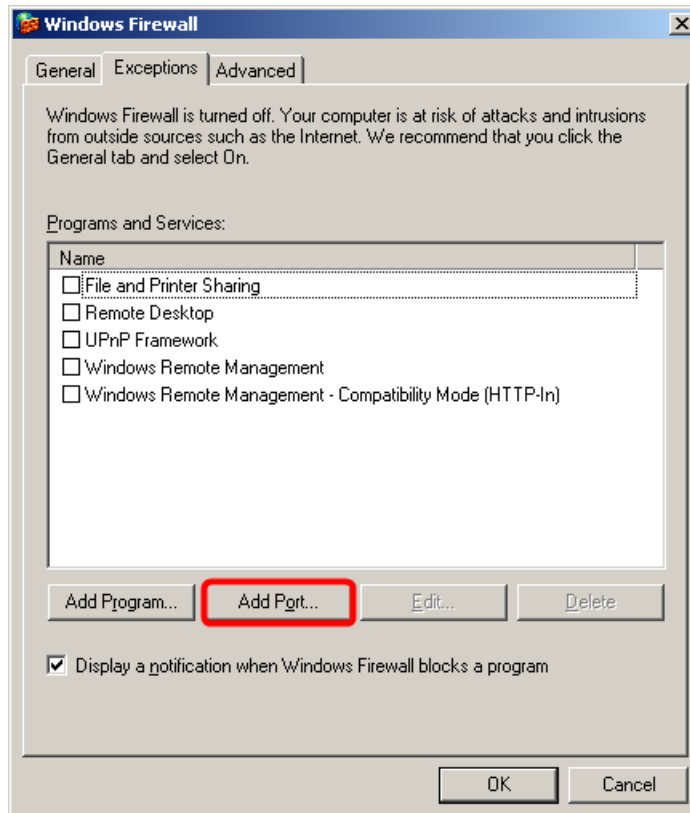
Defining the TCP/IP port number on the `VENDOR` row may slow down the restart time of Tekla Structures Licensing Service.

5. Save the changes and close `tekla.lic`.
6. Update your license server with the changes:
 - a. Go to **Tekla Structures Licensing** --> **LMTTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.

- b. Go to the **Service/License File** tab and ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.

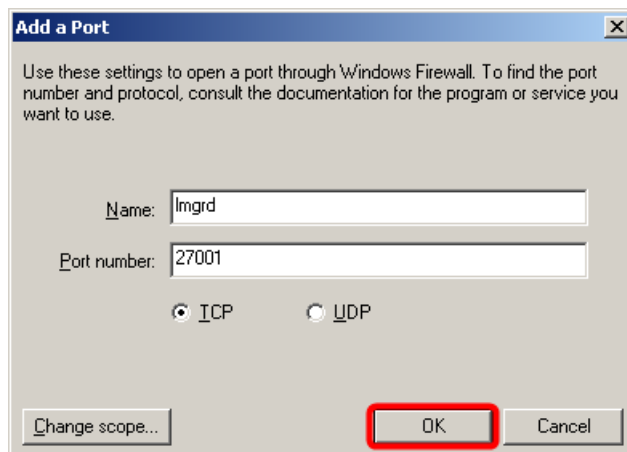


- c. Go to the **Start/Stop/Reread** tab and stop the license server by clicking **Stop Server**, and then start the server again by clicking **Start Server**.
7. Click **Start** --> **Control Panel** --> **Windows Firewall** .
 8. Click **Allow a program through Windows Firewall** in the left pane.
 9. On the **General** tab, make sure that you have not selected the **Don't allow exceptions** or **Block all incoming connections** check box, depending on your Windows operating system .
If you have selected the check box, the modifications do not take effect.
 10. On the **Exceptions** tab, click **Add Port**.



11. In the **Add a Port** dialog box:

- In the **Name** box, enter `lmgrd`.
- In the **Port** box, enter the TCP/IP port number that you set in step 3.



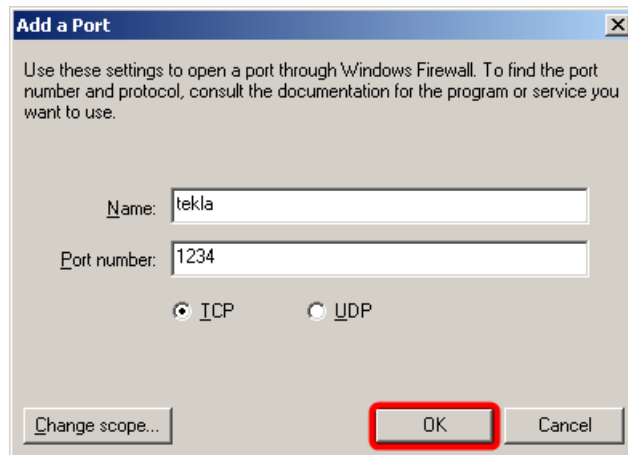
12. Click **OK** to confirm the changes.

`lmgrd` is added to the list of exceptions.

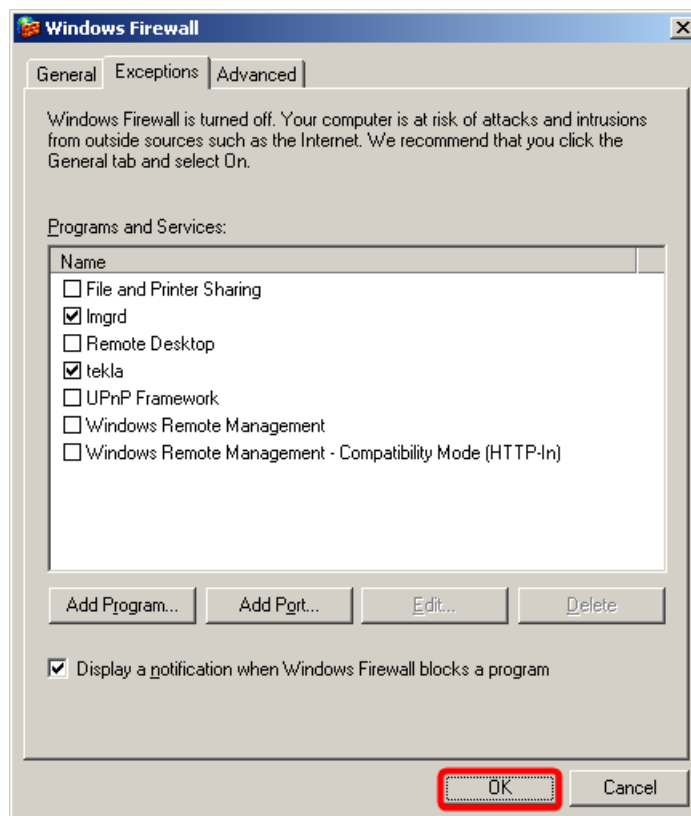
13. On the **Exceptions** tab, click again **Add Port** to open the **Add a Port** dialog box.

14. In the **Add a Port** dialog box:

- In the **Name** box, enter `tekla`.
- In the **Port** box, enter the TCP/IP port number that you set in step 4.



15. Click **OK** to confirm the changes.
`tekla` is added to the list of exceptions.
16. Click **OK** to confirm the modifications.



See also

[Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#)

Allow traffic in fixed TCP/IP ports: Windows 7, 8, 8.1, 10 and Windows Server 2012

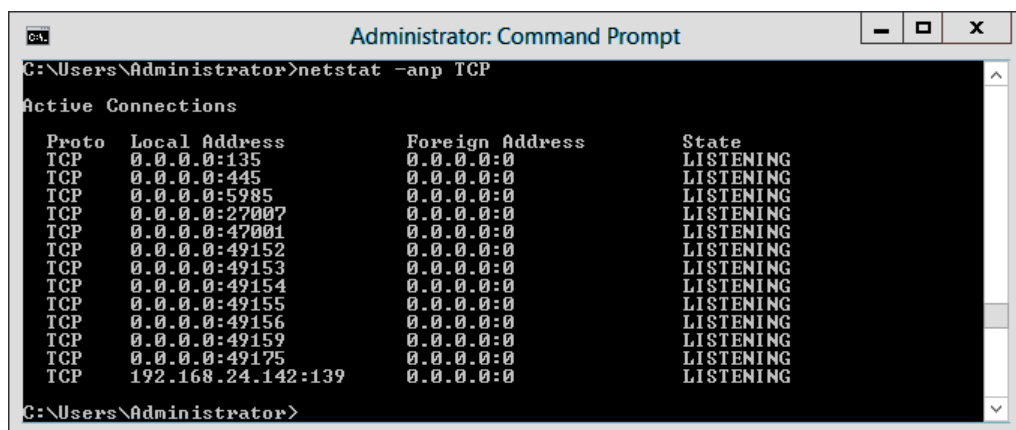
You need to modify the firewall settings to allow traffic through fixed TCP/IP port. The following instructions apply to Windows 7, 8, 8.1, 10 and Windows Server 2012.

To allow traffic in fixed TCP/IP ports in Windows 7, 8, 8.1, 10 and Windows Server 2012 on the license server computer:

1. Ensure that no other software or service is using the ports that you are about to set fixed.

Use the command line command `netstat -anp TCP` to find out which ports are in use.

The numbers in the **Local Address** column after the colon (:) are the port numbers that are in use.



```
Administrator: Command Prompt
C:\Users\Administrator>netstat -anp TCP

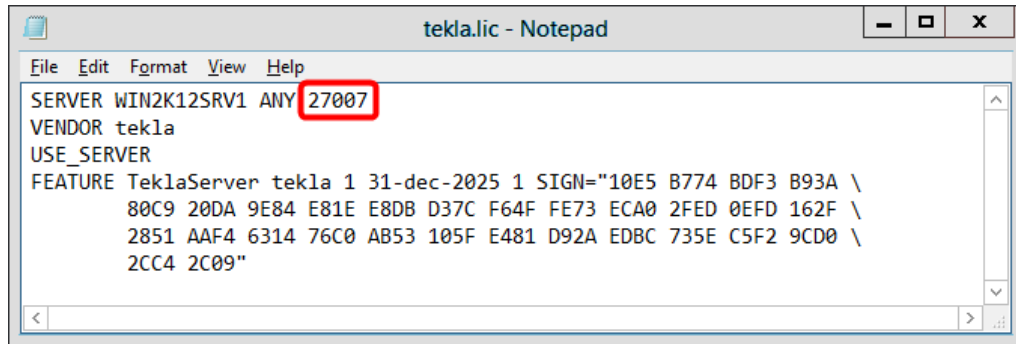
Active Connections

Proto Local Address           Foreign Address         State
TCP   0.0.0.0:135              0.0.0.0:0               LISTENING
TCP   0.0.0.0:445              0.0.0.0:0               LISTENING
TCP   0.0.0.0:5985             0.0.0.0:0               LISTENING
TCP   0.0.0.0:27007            0.0.0.0:0               LISTENING
TCP   0.0.0.0:47001            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49152            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49153            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49154            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49155            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49156            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49159            0.0.0.0:0               LISTENING
TCP   0.0.0.0:49175            0.0.0.0:0               LISTENING
TCP   192.168.24.142:139       0.0.0.0:0               LISTENING

C:\Users\Administrator>
```

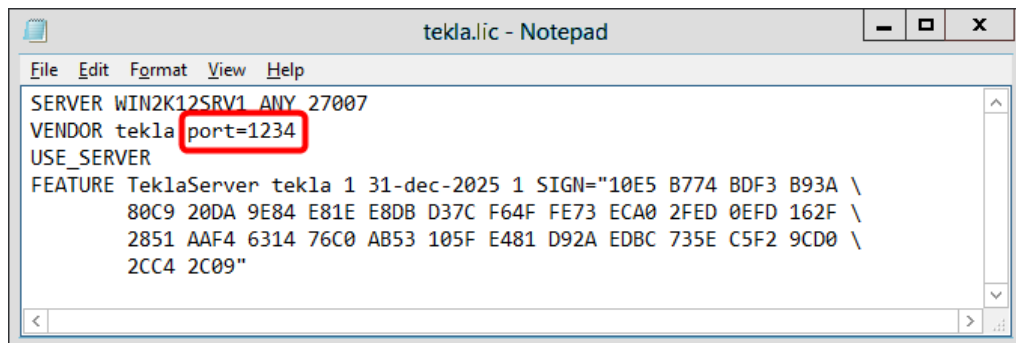
2. Browse for `tekla.lic`, and open it using a text editor.
By default, the path is `..\TeklaStructures\License\Server`.
3. To set a fixed port for `lmgrd.exe`, enter the TCP/IP port number at the end of the `SERVER` row.

The **Automatic** installation option sets the port to 27007.



```
tekla.lic - Notepad
File Edit Format View Help
SERVER WIN2K12SRV1 ANY 27007
VENDOR tekla
USE_SERVER
FEATURE TeklaServer tekla 1 31-dec-2025 1 SIGN="10E5 B774 BDF3 B93A \
      80C9 20DA 9E84 E81E E8DB D37C F64F FE73 ECA0 2FED 0EFD 162F \
      2851 AAF4 6314 76C0 AB53 105F E481 D92A EDBC 735E C5F2 9CD0 \
      2CC4 2C09"
```

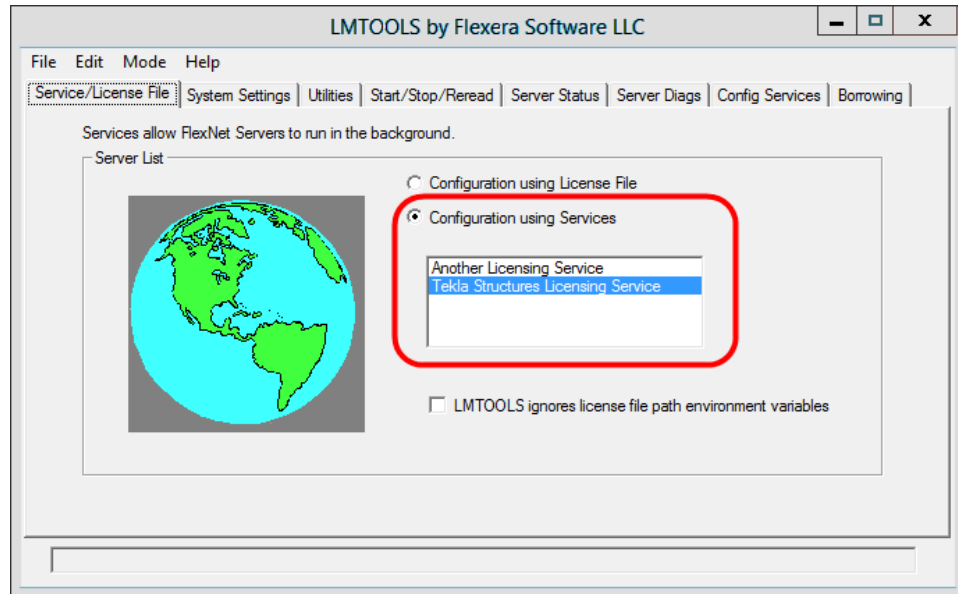
4. Enter the text `port=free_port` at the end of the `VENDOR` row, for example, `port=1234`.



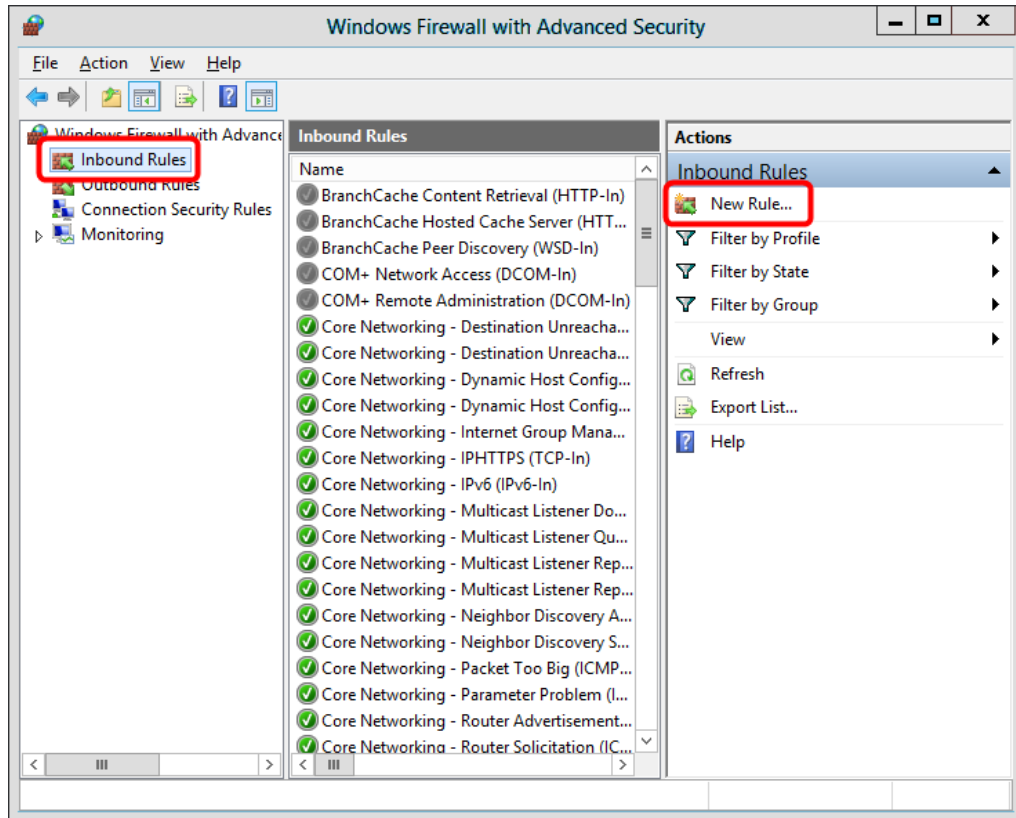
```
tekla.lic - Notepad
File Edit Format View Help
SERVER WIN2K12SRV1 ANY 27007
VENDOR tekla port=1234
USE_SERVER
FEATURE TeklaServer tekla 1 31-dec-2025 1 SIGN="10E5 B774 BDF3 B93A \
      80C9 20DA 9E84 E81E E8DB D37C F64F FE73 ECA0 2FED 0EFD 162F \
      2851 AAF4 6314 76C0 AB53 105F E481 D92A EDBC 735E C5F2 9CD0 \
      2CC4 2C09"
```

Defining the TCP/IP port number on the `VENDOR` row may slow down the restart time of Tekla Structures Licensing Service.

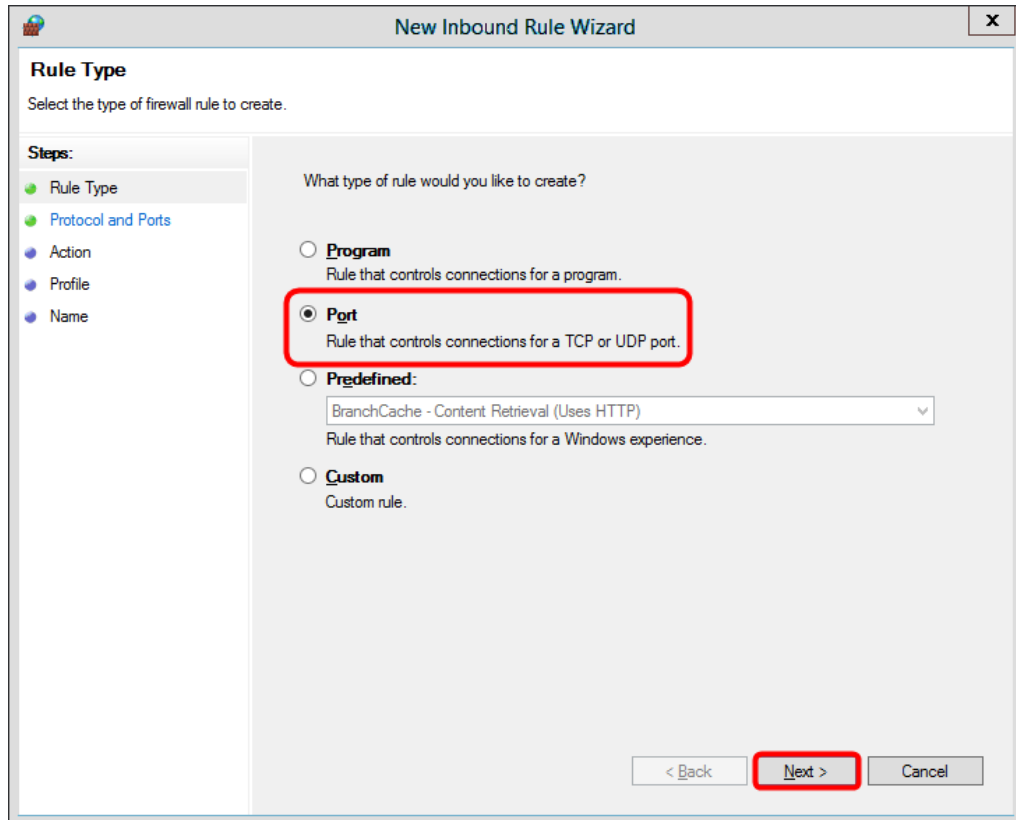
5. Save the changes and close `tekla.lic`.
6. Update your license server with the changes:
 - a. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
 - b. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.



- c. Go to the **Start/Stop/Reread** tab and click **Stop Server** to stop the license server, and then start the server again by clicking **Start Server**.
7. Click the Windows logo key on your keyboard to show the **Start** menu or **Start screen**, depending on the operating system.
8. Type `wf.msc` and press **Enter**. The **Windows Firewall with Advance Security** MMS snap-in is displayed.
9. In the navigation tree, select **Inbound Rule**, and then in the **Actions** pane, click **New Rule**.



10. On the **Rule type** panel, select **Port** and then click **Next**.



11. On the **Protocol and Ports** panel, select **TCP**, enter the TCP/IP port numbers that you set in steps 3 and 4 in **Specific local ports**, and then click **Next**.

New Inbound Rule Wizard [X]

Protocol and Ports

Specify the protocols and ports to which this rule applies.

Steps:

- Rule Type
- Protocol and Ports**
- Action
- Profile
- Name

Does this rule apply to TCP or UDP?

☒ **ICP**

☐ **UDP**

Does this rule apply to all local ports or specific local ports?

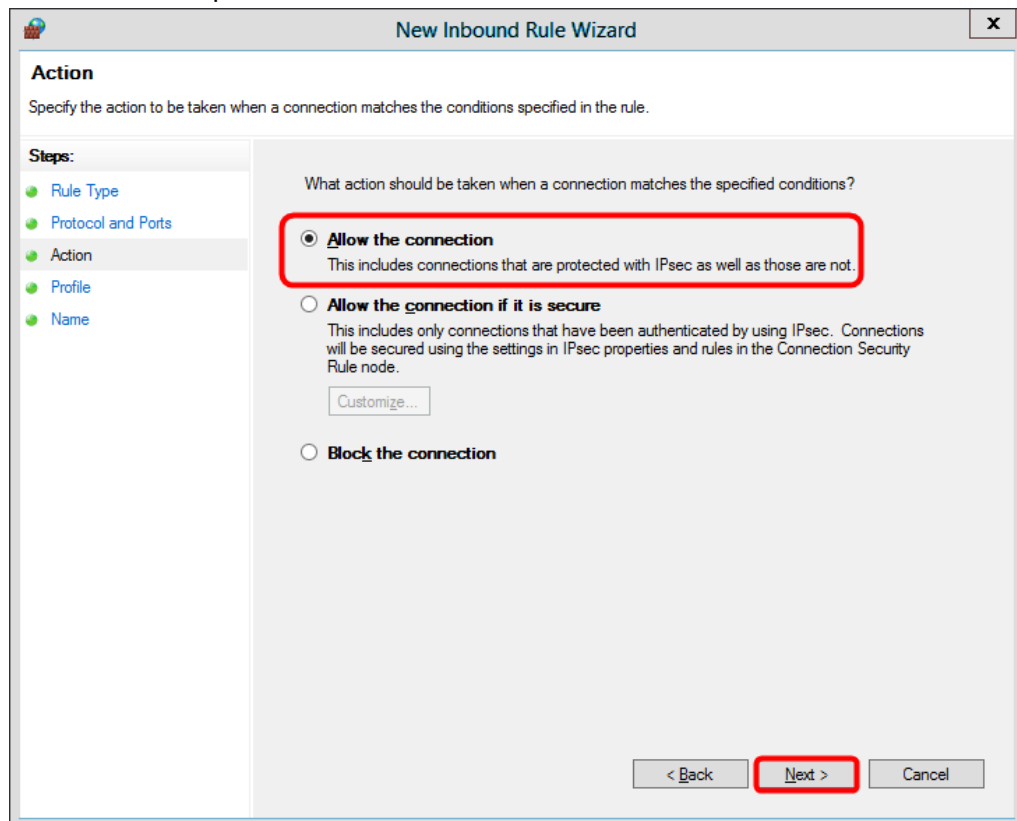
☐ **All local ports**

☒ **Specific local ports:**

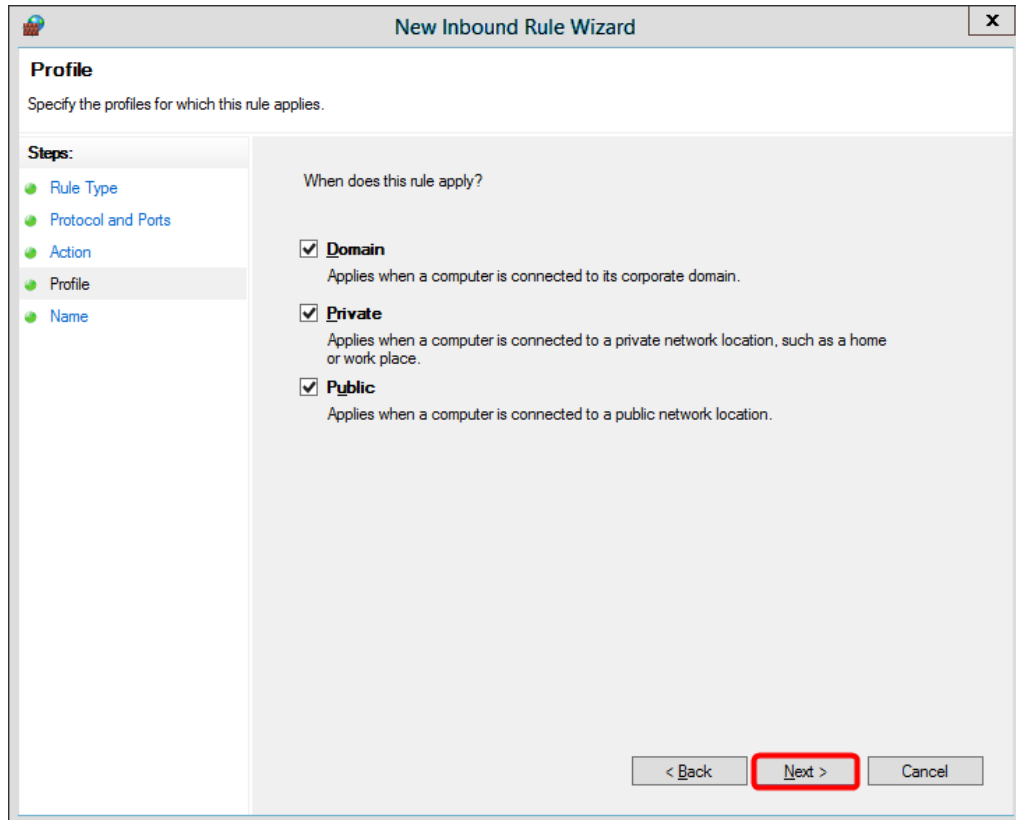
Example: 80, 443, 5000-5010

< Back **Next >** Cancel

12. On the **Action** panel, select **Allow the connection**, and then click **Next**.



13. On the **Profile** panel, select the appropriate profiles, and then click **Next**.



14. On the **Name** panel, enter the name of the rule, and then click **Finish**.

New Inbound Rule Wizard

Name

Specify the name and description of this rule.

Steps:

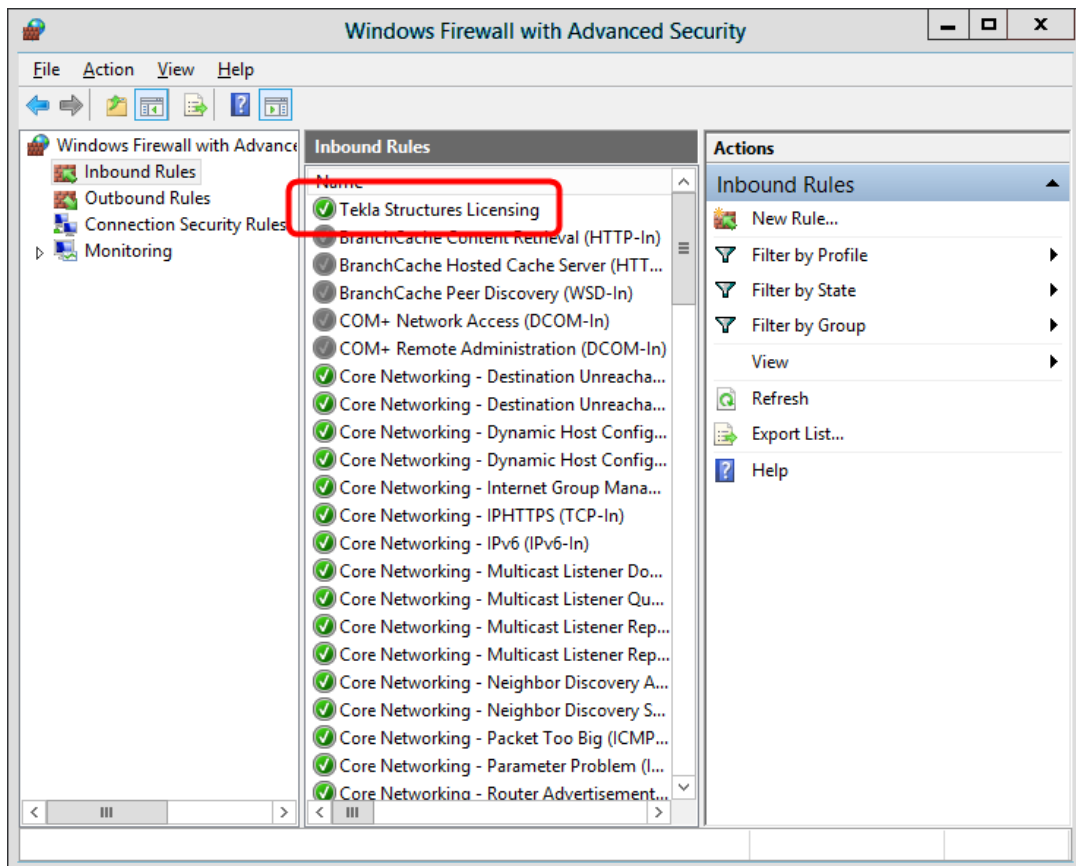
- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

Name:

Description (optional):

< Back **Finish** Cancel

The rule is created and automatically enabled.



Tekla Structures

Allow exceptions in firewall for Imgrd.exe and tekla.exe: Windows 7, 8, 8.1, 10 and Windows Server 2012 (page 56)

Allowing Tekla Structures license server to operate through Windows Firewall (page 52)

3.4 Activating Tekla Structures licenses

You need to activate the licenses on the license server to be able to use them. When you activate the licenses, your license server contacts the activation server at Trimble Solutions, and the license rights are transferred to the license server at your company or, in the case of a single user, to your computer.

Tekla Structures License Administration Tool is the application used for activating licenses. To be able to activate the licenses, you need an entitlement certificate.

Consider the following when you are activating licenses:

- If the license server is installed on the same computer as Tekla Structures, the user activates the licenses.

- If the license server is installed on a separate server computer, the administrator activates the licenses, grants the users the rights to use the activated licenses, and provides the users all the required information.
- You do not need to activate all the licences at once. You can activate part of the licenses now and part of the licenses later on some other computer, for example. Different configurations and different versions need to be selected for activation separately.
- Internet access is required in license activation because the license server at your company needs to contact the activation server at Trimble Solutions.
- You need to decide whether you want to notify the license server of license changes manually or automatically. Do not use automatic notification if you are using some other FlexNet license and license server administration tool, such as FlexNet Manager.

Entitlement certificate `EntitlementCertificate.html`

- You need to save the Tekla Structures license entitlement certificate, which is sent in an e-mail to the person in your organization who has made the license purchase, or to someone named as the contact person. The entitlement certificate states the configurations, quantities and activation IDs of the Tekla Structures licenses you are entitled to use. The activation ID enables the transfer of license rights. Before activating any licenses, you need to download the entitlement certificate file `EntitlementCertificate.html` from your e-mail to the `.. \TeklaStructures\License\Server` folder. After that you can open the entitlement certificate with **Tekla Structures License Administration Tool** and activate your licenses.

See also

[Activate Tekla Structures licenses using automatic server notification \(page 72\)](#)

[Activate Tekla Structures licensing using manual server notification \(page 74\)](#)

[Problems in Tekla Structures license activation \(page 90\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Activate Tekla Structures licenses using automatic server notification

You can activate Tekla Structures licenses in **Tekla Structures License Administration Tool**. In activation, the license server at your company contacts the activation server at Trimble Solutions using an Internet connection. Before the activation can be done, the entitlement certificate needs to be opened. You can notify the license server automatically or

manually about license changes, but the automatic server notification is recommended.

NOTE Do not use automatic notification if you are using some other FlexNet license and license server administration tool, such as FlexNet Manager. To notify the license server about license changes manually, see [Activate Tekla Structures licensing using manual server notification \(page 74\)](#).

To activate the licenses and notify the license server automatically:

1. Go to **Tekla Structures Licensing --> Tekla Structures License Administration Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. If not already enabled, enable the automatic license server notification functionality by clicking the **Notify Server** button.
3. Open the license entitlement certificate located in the . . \TeklaStructures\License\Server folder by clicking **Open**, navigating to . . \TeklaStructures\License\Server, selecting EntitlementCertificate.html, and clicking **Open** again. The license information is displayed in the **Entitled Licenses** area.

Entitled Licenses									
Activate	Quantity	Order ID	Activation ID	Description	Configuration	Version	Type	Start Date	Expiration Date
	1	Tekla HQ	04C1-3F1E-5...	FUD-C	Full	20		1.5.2015	31.5.2015
	2	Tekla HQ	4B73-A2E9-...	STD-C	SteelDetailing	20		1.5.2015	31.5.2015

4. Click the **Activate** cell and select the number of licenses to activate.

Entitled Licenses									
Activate	Quantity	Order ID	Activation ID	Description	Configuration	Version	Type	Start Date	Expiration Date
1	1	Tekla HQ	04C1-3F1E-5...	FUD-C	Full	20		1.5.2015	31.5.2015
	2	Tekla HQ	4B73-A2E9-...	STD-C	SteelDetailing	20		1.5.2015	31.5.2015

5. Click the **Activate** button.

Your license server contacts the license activation server at Trimble Solutions.

- The activated licenses are displayed in the **Activated Licenses** area.
- Do not forget to take a backup copy of the trusted storage of the activated licenses.
- When you open **Tekla Structures License Administration Tool** later on, it detects expired and broken licenses you may have and asks if you want to deactivate or repair them. If you select **Yes**, an automatic deactivation or repair is run.

Useful links

For more information about the status of the activated licenses in the trusted storage and manual license activation, the following Support Articles in Tekla User Assistance:

[How to list the activated licenses using command lines](#)

[Checking the status of the activated licenses in the trusted storage](#)

[Checking the status of the activated licenses in the trusted storage \(including borrowing info\)](#)

[How to activate licenses using command lines - Manual Activation](#)

See also

[Activating Tekla Structures licenses \(page 71\)](#)

[Problems in Tekla Structures license activation \(page 90\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Activate Tekla Structures licensing using manual server notification

You can activate Tekla Structures licenses in **Tekla Structures License Administration Tool**. In activation, the license server at your company contacts the activation server at Trimble Solutions using an Internet connection. You can notify the license server manually of license changes. Before the activation can be done, the entitlement certificate needs to be opened.

NOTE Do not use automatic notification if you are using some other FlexNet license and license server administration tool, such as FlexNet Manager.

To activate the licenses and notify the server manually:

1. Go to **Tekla Structures Licensing** --> **Tekla Structures License Administration Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. Open the license entitlement certificate located in the . . \TeklaStructures\License\Server folder by clicking **Open**, navigating to . . \TeklaStructures\License\Server, selecting `EntitlementCertificate.html`, and clicking **Open** again. The license information is displayed in the **Entitled Licenses** area.

Entitled Licenses									
Activate	Quantity	Order ID	Activation ID	Description	Configuration	Version	Type	Start Date	Expiration Date
	1	Tekla HQ	04C1-3F1E-5...	FUD-C	Full	20		1.5.2015	31.5.2015
	2	Tekla HQ	4B73-A2E9-...	STD-C	SteelDetailing	20		1.5.2015	31.5.2015

- Click the **Activate** cell and select the number of licenses to activate.

Entitled Licenses									
Activate	Quantity	Order ID	Activation ID	Description	Configuration	Version	Type	Start Date	Expiration Date
	1	Tekla HQ	04C1-3F1E-5...	FUD-C	Full	20		1.5.2015	31.5.2015
1	2	Tekla HQ	4B73-A2E9-...	STD-C	SteelDetailing	20		1.5.2015	31.5.2015

- Click the **Activate** button.

Your license server contacts the license activation server at Trimble Solutions.

- Next, you need to notify the server. This has to be done each time you activate a license.
 - Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
 - On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
 - In the **LMTOOLS** dialog box, go to the **Start/Stop/Reread** tab.
 - Click **ReRead License File**.

The license server reads the license information.

- The activated licenses are displayed in the **Activated Licenses** area.
- Do not forget to take a backup copy of the trusted storage of the activated licenses.
- When you open **Tekla Structures License Administration Tool**, it detects expired and broken licenses you may have and asks if you want to repair or deactivate them. If you select **Yes**, an automatic deactivation or repair is run.

Useful links

For more information about the status of the activated licenses in the trusted storage and manual license activation, see the following Support Articles in Tekla User Assistance:

[How to list the activated licenses using command lines](#)

[Checking the status of the activated licenses in the trusted storage](#)

[Checking the status of the activated licenses in the trusted storage \(including borrowing info\)](#)

[How to activate licenses using command lines - Manual Activation](#)

See also

[Activating Tekla Structures licenses \(page 71\)](#)

[Problems in Tekla Structures license activation \(page 90\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

3.5 Connect Tekla Structures to the license server

To be able to use Tekla Structures on your computer, you need to connect Tekla Structures to the licenses available on the license server.

- When you start Tekla Structures for the first time, the system asks you to define the Tekla Structures license server.

1. Start Tekla Structures.

The image shows a dialog box for configuring the Tekla Structures license server. At the top is the Tekla logo, which consists of a blue stylized network icon and the word 'TEKLA' in red, with 'A TRIMBLE COMPANY' in smaller black text below it. The main text in the dialog says: 'Give the address of your Tekla Structures license server. Contact your system administrator if you are unsure of which server address to use.' Below this text is a label 'Server address:' followed by a text input field. To the right of the input field is a button labeled 'Check licenses >>'. Below the input field is another empty text input field. At the bottom left is an 'OK' button, and at the bottom right is a 'Cancel' button.

2. Enter the `port@hostname` address of the license server in the **Server address** box.

For example, `27007@server_hostname`.

You can define several license servers by separating the addresses with semicolons. For example,

`27007@server_hostname_1;27007@server_hostname_2`.

3. If you want to check which licenses are available on the license server, click **Check licenses**.
4. Click **OK** to start Tekla Structures.

5. If you need to redefine the license server at some point, go to the **File** menu and click **Settings** --> **Change License Server** in Tekla Structures.
The change comes into effect the next time you start Tekla Structures.

See also

[Install Tekla Structures license server - automatic installation \(page 45\)](#)

[Modify the license file tekla.lic manually \(page 49\)](#)

[Activate Tekla Structures licenses using automatic server notification \(page 72\)](#)

[Problems in starting Tekla Structures \(page 100\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

3.6 Maintain licenses

After the initial licensing setup, you need to make changes in the following situations:

- You can ensure that the correct types of licenses are available to the users who most need them by defining access rights for using and borrowing licenses, see [Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#)
- You need to [deactivate your existing licenses \(page 82\)](#):
 - When you start using a new version of Tekla Structures, which requires activating renewed licenses.
 - When you make hardware changes that affect the license server.
- If your licenses become untrusted or disabled, you can repair them a limited number of times as explained in [Repair a Tekla Structures license \(page 84\)](#).

See also

[Troubleshoot Tekla Structures licensing \(page 86\)](#)

Modify Tekla Structures license access rights (tekla.opt)

The license server administrator may grant different users and user groups different rights to use licenses by modifying the `tekla.opt` options file. This can prevent situations where there are no licenses available for users that need them because someone else has reserved or borrowed a license that they do not really need.

The licensing options file `tekla.opt` is located in the `..\TeklaStructures\License\Server` folder.

The most common configuration options include the following:

- You can define the access rights for specific usernames or hostnames/IP addresses either individually or using groups that you define. You can use the same username or hostname in several groups.
- You can **reserve** a number of licenses for a specific configuration (e.g., Steel detailing) for exclusive use by a specific user or user group. If necessary, the users in the group can reserve more licenses than the reserved quota. Other users can only use one of the remaining free licenses outside the reserved quota.
- You can define a maximum (**max**) number of licenses that a user or group can simultaneously use. Users who are not included in this limitation can use any free license.
- You can **include** (allow) a user or group in the exclusive use of all licenses for a specific configuration. Other users are prevented from using the configuration.
- You can **exclude** (disallow) specific users from using any licenses for a specific configuration. All other users are allowed to use the configuration.
- You can include and exclude users from borrowing licenses.

To modify access rights in the `tekla.opt` file:

1. Go to the `..\Tekla Structures\License\Server` folder.
2. Open the `tekla.opt` file in a text editor.
3. Enter your definitions for license access rights and restrictions.

The definition string consists of the following parts: `[keyword] [Tekla Structures feature] [user type] [name]`

When you write the definition, follow the rules below.

- Note that the options file is case sensitive.
- If you need to define user groups and host groups, define them first.
Use Windows user names when defining user groups and hostnames or IP addresses when defining host groups.
- Enter one definition per row. A definition consists of the following things:
 - An options keyword that defines the actions.
 - A feature, such as a configuration, that is affected by the keyword.
 - The type that is affected by the keyword.

The options are: `USER`, `GROUP`, `HOST`, and `HOST_GROUP`.

- The name of the user, user group, host, or host group that is affected by the keyword.

You can use the hostnames or IP addresses of the computers with the `HOST` and `HOST_GROUP` keywords.

- To disable a row in the options file, enter # in the beginning of the row.

Examples of definitions:

`INCLUDE PCD-C USER scarlett` (Only the user scarlett is allowed to use the **Precast Concrete Detailing** configuration.)

`RESERVE 1 RCD-C USER vera` (One license of the **Rebar Detailing** configuration is reserved for the user vera.)

For details about the allowed keywords and configuration codes together with more examples, [Configuration codes and keywords used in access right definitions \(page 79\)](#).

4. Save the changes and close the text editor.
5. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
6. In **LMTOOLS**, go to the **Start/Stop/Reread** tab and click the **ReRead License File** button to update the changes in the license file and in the options file.

Useful links

For more information about limiting certain Tekla Structures versions to certain users, see the following Support Article in Tekla User Assistance: [How to limit certain Tekla Structures version to certain users](#)

Configuration codes and keywords used in access right definitions

When you define access rights in `tekla.opt`, you need to use correct abbreviations (codes) for the configurations, otherwise the definitions do not work. The access rights are defined using certain keywords.

Configuration codes

When you define access rights for different Tekla Structures configurations in the `tekla.opt` options file, you need to add a proper code for each configuration in the definition.

NOTE The configuration codes are backward compatible, and the codes used for licensing in older Tekla Structures versions still work. However, the commercial product name of the configuration may change between versions. For example, the commercial product name for STD-L used to be Steel Detailing Limited, but now it is Primary.

The codes for the Tekla Structures configurations are listed below:

Configuration code	Configuration
CM-C	Construction Modeling
DEV-C	Developer
DFR-C	Drafter
EDU-C	Educational
FUD-C	Full
PCD-C	Precast Concrete Detailing
RCD-C	Rebar Detailing
SDE-C	Engineering
STD-C	Steel Detailing
PPC-C	Production Planner - Concrete
STD-L-C	Primary
VIE-C	Project Viewer

Most common keywords

The most common keywords that are used for defining license access rights and restrictions in the `tekla.opt` options file are listed and described below:

Keyword	Description	Usage information
EXCLUDE	Prevent access to a Tekla Structures configuration.	Use with the abbreviation of the configuration.
EXCLUDE_ENTITLEMENT	Prevent license borrowing.	Use with the activation ID of the license.
EXCLUDEALL	Prevent access to all Tekla Structures configurations.	
GROUP	Define a user group for use with any options.	Use with Windows user names (separated with spaces).
HOST_GROUP	Define a host group for use with any options.	Use with computer hostnames or IP addresses (separated with spaces).
INCLUDE	Allow a user to use a Tekla Structures configuration.	Use with the abbreviation of the configuration.
INCLUDE_ENTITLEMENT	Allow a user to borrow a license.	Use with the activation ID of the license.
INCLUDEALL	Allow a user to use all Tekla Structures configurations.	

Keyword	Description	Usage information
MAX	Limit the usage of a configuration.	Use with the number of licenses and the abbreviation of the configuration.
RESERVE	Reserve licenses for a user/host or a group of users/hosts.	Use with the number of licenses and the abbreviation of the configuration.

- When somebody is allowed to use a configuration with the `INCLUDE` keyword, other users are automatically prevented from using the configuration.
- When somebody is denied to use a configuration with the `EXCLUDE` keyword, other users are automatically allowed to use the configuration.
- If no rules exist, everybody is allowed to use the configuration.

Some examples of definitions in a `tekla.opt` options file are given below:

Options file definition	Description
<code>INCLUDE PCD-C USER scarlett</code>	Only the user scarlett is allowed to use the Precast Concrete Detailing configuration.
<code>EXCLUDE FUD-C USER justin</code>	The user justin is not allowed to use the Full configuration. Other users are allowed to use the Full configuration.
<code>GROUP tsusers jessica joe neil</code> <code>INCLUDEALL GROUP tsusers</code>	The users jessica , joe and neil belong to the group tsusers . Only the group tsusers is allowed to use all configurations.
<code>EXCLUDEALL HOST pcrobert</code>	No configuration is allowed to be used on the computer pcrobert .
<code>INCLUDE_ENTITLEMENT qwer-1234-asdf-5678-zx</code> <code>USER gwen</code>	Only the user gwen is allowed to borrow a license whose activation ID is qwer-1234-asdf-5678-zx .
<code>EXCLUDE_ENTITLEMENT rtyu-9876-fghj-5432-cv</code> <code>USER matt</code>	The user matt is not allowed to borrow a license whose activation ID is rtyu-9876-fghj-5432-cv .
<code>GROUP students amy chloe andy dean</code> <code>MAX 3 EDU-C GROUP students</code>	The users amy , chloe , andy , and dean belong to the group students . The limit to the usage of the Educational configuration for the group students is three licenses.
<code>RESERVE 1 RCD-C USER vera</code>	One license of the Rebar Detailing configuration is reserved for the user vera .

Options file definition	Description
<pre>GROUP STUDENTS user1 user2 user3 RESERVE 3 VIE-C GROUP STUDENTS</pre>	<p>The users user1 user2 user3 belong to the group STUDENTS. 3 licenses of the Project Viewer configuration are reserved for the group STUDENTS.</p> <p>STUDENTS is a group name.</p> <p>user1 - user 3 are Windows user names separated with spaces.</p> <p>The number 3 is the number of licenses to reserve.</p> <p>VIE-C is the configuration code for the Project Viewer configuration.</p> <p>Note that any licenses reserved for a group are dedicated to that group. Even when that group is not actively using the licenses, the licenses are unavailable to other users.</p>
<pre>INCLUDE VIE- C:VENDOR_STRING=Enterpris e USER john</pre>	<p>Only the user john is allowed to use the Project Viewer configuration which is of type Enterprise.</p>

Useful links

For more information about limiting certain Tekla Structures versions to certain users, see the following Support Article in Tekla User Assistance: [How to limit certain Tekla Structures version to certain users](#)

Deactivating Tekla Structures licenses

When you deactivate a license, the license rights are transferred from your license server back to Trimble Solutions. Subsequent Tekla Structures licenses are linked to each other. This means that you need to deactivate the previous licenses in the chain before you can activate the subsequent licenses. Linking works also the other way around: if you have activated a subsequent license, you cannot activate the earlier license after that.

- You need to deactivate all the licenses that are displayed on the same row in the **Activated Licenses** area in the **Tekla Structures License Administration Tool**.
- Internet access is required in license deactivation.
- After deactivation, you can activate the licenses again on the same or on another server.

NOTE Before you deactivate licenses, ensure that the licenses are not in use or borrowed. The borrowed licenses must be returned before they can be deactivated.

When you need to deactivate licenses

- Before activating the next temporary license or a permanent license in the license chain.
- When renewing the annual maintenance, for example, when you switch from Tekla Structures 20 licenses to Tekla Structures 21 licenses, you need to deactivate the licenses from the previous year to be able to activate the licenses for the following year.
- If you have activated a wrong configuration or too many configurations.
- Before re-hosting the license server from one computer to another.
- Before changing hardware or the IP address on the license server.
- Before reinstalling or upgrading Windows on your server computer.
- Before formatting your server computer.

When you do not need to deactivate licenses

You do not need to deactivate licenses before uninstalling and reinstalling the license server.

See also

[Deactivate Tekla Structures licenses \(page 83\)](#)

[Problems in Tekla Structures license deactivation \(page 95\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Deactivate Tekla Structures licenses

NOTE Before you deactivate licenses, ensure that the licenses are not in use or borrowed. The borrowed licenses must be returned before they can be deactivated.

To deactivate licenses:

1. Go to **Tekla Structures Licensing --> Tekla Structures License Administration Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system. Start **Tekla Structures License Administration Tool** with administrator rights.
2. In the **Tekla Structures License Administration Tool** dialog box, go to the **Statistic** tab and ensure that no-one is using the licenses.

3. If you have not activated the automatic server notifications (the **Notify Server** option in **Tekla Structures License Administration Tool**), you need to stop the license server manually in **LMTOOLS**:
 - a. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system. Start **LMTOOLS** with administrator rights.
 - b. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
 - c. Go to the **Start/Stop/Reread** tab and click **Stop Server**.
4. In **Tekla Structures License Administration Tool**, go to the **Licenses** tab.

The **Activated Licenses** area lists the active licenses.

5. Select the **Deactivate** check box to select the license for deactivation.

If you activated more than one license of the same type in one go, you cannot deactivate those licenses one by one, but you need to deactivate all of the licenses in one go.
6. The **Deactivate** button is activated, click it.

The license server contacts the activation server at Trimble Solutions. Internet access is required at this stage. After a successful deactivation you will see the license successfully deactivated message, and the **Tekla Structures License Administration Tool** dialog box is updated.

For more information about manual license deactivation, see the following Support Article in Tekla User Assistance:

[How to deactivate licenses using command line - Manual Deactivation](#)

See also

[Deactivating Tekla Structures licenses \(page 82\)](#)

[Problems in Tekla Structures license deactivation \(page 95\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Repair a Tekla Structures license

If your licenses have become untrusted or disabled, they cannot be used and you need to repair them.

The license trust status is indicated in the **Activated Licenses** area in **Tekla Structures License Administration Tool**. If a trust status symbol is green, the information is trusted, if red, the information is untrusted.

WARNING Because of technical and security reasons, you can repair a license only a limited number of times, which at the moment is two times a year. Therefore it is important that you inform your local Tekla Structures representative about the license repairs you have been performing, and keep count of the repairs.

The status can be one of the following:

- A red **H (Host)** indicates whether the server has been moved to another computer, or whether the computer hardware has changed radically.

The **Host** trust status of your license is not trusted:



NOTE Licenses that have the **Host** trust status untrusted cannot be repaired.

- A red **T (Time)** indicates whether the system clock has been tampered with.

The **Time** trust status of your license is not trusted:



- A red **R (Restore)** indicates whether the license is obtained from a backup copy.

The **Restore** trust status of your license is not trusted:



To repair a Tekla Structures license:

1. Go to **Tekla Structures Licensing --> Tekla Structures License Administration Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.

The **Activated Licenses** area displays the activated licenses.

2. Click **Repair**.

The license server contacts the activation server at Trimble Solutions. After successful repairing the trust status in **Tekla Structures License Administration Tool** dialog box is updated.

For more information about the status of the activated licenses in the trusted storage, see instructions in the following Support Articles in Tekla User Assistance:

[Checking the status of the activated licenses in the trusted storage](#)

[Checking the status of the activated licenses in the trusted storage \(including borrowing info\)](#)

Troubleshoot Tekla Structures licensing

Click the links below for help in solving problems encountered in the following areas:

- [View and diagnose errors in Tekla Structures license activation, deactivation and borrowing \(page 86\)](#)
- [Problems in Tekla Structures license server installation and connecting to the license server \(page 87\)](#)
- [Problems in FlexNet \(page 90\)](#)
- [Problems in Tekla Structures license activation \(page 90\)](#)
- [Problems in Tekla Structures license deactivation \(page 95\)](#)
- [Problems in Tekla Structures license borrowing \(page 95\)](#)
- [Problems in Tekla Structures license trusted storage \(page 96\)](#)
- [Problems using LMTOOLS in Tekla Structures licensing \(page 97\)](#)
- [Problems in starting Tekla Structures \(page 100\)](#)
- [Problems with options file tekla.opt \(page 101\)](#)

For more information about error messages starting with an error code, see [Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#).

View and diagnose errors in Tekla Structures license activation, deactivation and borrowing

Tekla Structures License Administration Tool and **Tekla Structures License Borrow Tool** both give error messages when errors occur. The tools automatically create packages of all necessary files required for diagnosing the errors.

If you have a problem with activating or deactivating licenses, or borrowing or returning licenses, **Tekla Structures License Administration Tool** and **Tekla Structures License Borrow Tool** display an error message in the **Activating**

Licenses(s), Deactivating License(s), Borrowing License(s) or Returning Borrowed License(s) dialog boxes, depending on the subject of the error.

- You can view more detailed information about an error by clicking the **View** button in an error dialog box.
- **Tekla Structures License Administration Tool** and **Tekla Structures License Borrow Tool** automatically create zip packages of all necessary files required for diagnosing the errors in the `C:\TeklaStructures\License\Server\Reports` folder and in the `%TEMP%\TeklaStructures License Borrow Tool\Reports` folder. Click **Browse** in the error dialog box to browse for the folder containing the error report package. You can send the package to your local support to get help.

The error report package contains the following files:

`tekla_debug.log` - Tekla Structures license server debug log file

`error.txt` - error report, contains error information. The **Tekla Structures License Borrow Tool** zip package only contains this file.

`tekla.opt` - access rights options file

`tekla.lic` - Tekla Structures license file

See also

[Troubleshoot Tekla Structures licensing \(page 86\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Problems in Tekla Structures license server installation and connecting to the license server



License server installation fails, and the following message is displayed:
"A newer version of this application is already installed on this computer. If you wish to install this version, please uninstall the newer version first. Click OK to exit the wizard."

Reason: You have a newer version the license server installed.

Solution: You should not install an old version of the license server. Check the latest available license server release on the [Tekla Downloads](#) product download page.

The license server version is not dependent on the Tekla Structures. However, if you need to use an older version of the license server for some reason, uninstall the newer version on your computer before installing the older version.



License server installation does not finish (no error message)

Reason: Another software using the FlexNet licensing system is running on the computer.

Solution: Stop all licensing services in **LMTOOLS**, then install the Tekla Structures license server and restart the licensing services you stopped earlier:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** is selected, select a license service from the services list, go to the **Start/Stop/Reread** tab and click **Stop Server**.

Do the same for all the services you need to stop.

3. Install the Tekla Structures license server.
4. In **LMTOOLS**, start the licensing services you stopped earlier.



Problem in license server connection. The following message is displayed: "Error when connecting to the license server. Contact your system administrator or try another server".

Reason: This problem is often related to firewall settings.

Solution: Check that your firewall allows the client to contact the license server.



License library initialization failed with error: The licensing service is not installed.

Reason: The error occurs when you are starting **Tekla Structures License Administration Tool**, or when you are trying to run `serveractutil.exe` command line tool.

Solution: If you selected the **Manual** option for Tekla Structures licensing service installation then you need to manually install FLEXnet licensing service:

1. If you have some other FlexNet licensing service running on the server, stop it before entering the commands.
2. Go to the **Start** menu or **Start screen**, depending on your Windows operating system, and open **Command Prompt** as an administrator.
3. At the command prompt, type the following commands:

```
cd /D full_path_to_installation_directory
```


For example, if you install Tekla Structures license server to the default folder, you need to enter `cd /D C:\TeklaStructures\License\Server`.

`installanchorservice.exe`



Cannot connect to the license server.

Solution: For the first time that you connect to the Tekla Structures license server a client computer that has a new version of Tekla Structures installed, you need to do the following:

- Ensure that both (the client computer and the license server) are in the same domain.
- Ensure that Local Area Network connection is established. The license server and the client computers need to be in the same Local Area Network.
- Turn off the firewall and pause the antispysware/antivirus protection of your computer.

After the steps above do the following on your company's license server:

1. Make sure that no one is using Tekla Structures (ask all users to close Tekla Structures).
2. Go to `C:\TeklaStructures\License\Server` and open the `tekla.lic` file in a text editor.
3. Add a free TCP/IP port for the licensing service at the end of the first row, if it does not exist by default. Note that the automatic installation option sets the port by default to 27007.

Example of the first row: `SERVER MYSERVER ANY 27007`, where `MYSERVER` is the license server and `27007` is the port.

4. Save and close the file after changes.
5. Go to **Tekla Structures Licensing** --> **LMTTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
6. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
7. On the **Start/Stop/Reread** tab, click **Stop Server**. Wait couple of seconds and click on **Start Server**.

After defining the server and the port, do the following on your Tekla Structures workstations:

1. Start Tekla Structures.
2. In the **Connect to License Server** dialog box, add the port to the front of the server definition and click **OK**.

Example: `27007@MYSERVER`

**Cannot start the Tekla Structures licensing service.**

Reason: The `tekla-debug.log` file may be locked, thus preventing the service from starting.

Solution: Delete the `tekla-debug.log` and restart the computer.

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[Installing Tekla Structures license server \(page 43\)](#)

[Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#)

Problems in FlexNet**An internal error occurred. FlexNet internal error.**

Reason: There is a problem with the **Tekla Structures License Server** installation.

Solution: This error can often be fixed by performing the steps below:

1. Uninstall all existing Tekla Structures license server installations.
2. Check that all the files are deleted from the Tekla Structures license server installation folder: `.. \TeklaStructures\License\Server`.
3. Install the latest Tekla Structures license server. Check for the latest version in [Tekla Downloads](#).

See also

[Installing Tekla Structures license server \(page 43\)](#)

[Uninstall the license server manually \(page 0 \)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Problems in Tekla Structures license activation

The following message is displayed: "Error reading entitlement file".

Reason: The .NET Framework is not working for some reason.

Solution: Reinstall the existing .NET Framework, or install the latest .NET Framework version that is available for your operating system.



License activation fails, and the following message is displayed: "Unable to activate more licenses than you are entitled to".

Reason: There are a couple of possible reasons for the problem:

- You may have activated licenses on another computer. You cannot activate more licenses than you are entitled to.
- You tried to activate a renewed temporary license or a permanent license without deactivating the previous temporary license.

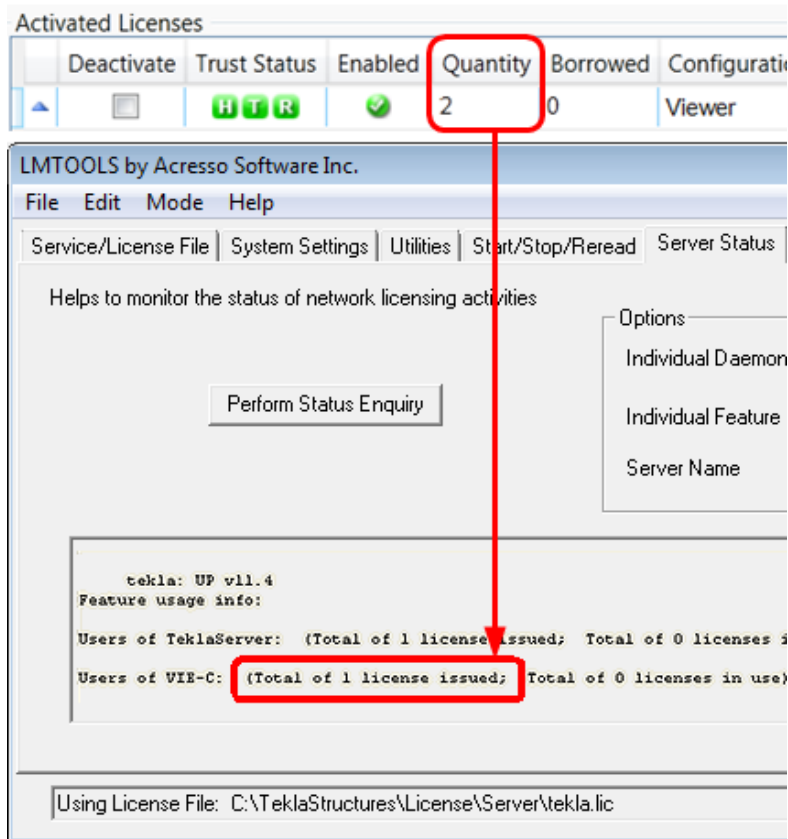
Solution: There are two possible solutions:

- Deactivate a license on another computer and then activate the license on your computer.
- Deactivate the existing temporary license and then activate the succeeding linked license.

For more information about deactivating licenses, see [Deactivate Tekla Structures licenses \(page 83\)](#).



The amount of activated licenses in Tekla Structures License Administration Tool and LMTOOLS does not match.



Reason: The licensing service is not updated with new license information.

Solution 1: Reread the license file in **LMTOOLS**:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Start/Stop/Reread** tab, click **ReRead License File**.

Solution 2: If you are connected to several license servers, rereading the license file may not work. In that case, you need to stop the license server and then restart it in **LMTOOLS**:

1. Ensure that no one is using Tekla Structures license server.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. On the **Start/Stop/Reread** tab in **LMTOOLS**, select the **Force Server Shutdown** check box and click **Stop Server**.
4. Check that the status is "Stopping server". Wait for a few minutes.
5. Click **Start Server**, and ensure that "Server Start Successful" is displayed.

TIP To avoid the problem in the future, ensure that the license server is automatically notified when you activate, deactivate, or repair licenses.

To enable the automatic notification functionality in **Tekla Structures License Administration Tool**, click the **Notify Server** button.

For more information about starting and stopping server and rereading the license file, see LMTOOLS options and settings used in Tekla Structures licensing.

For more information about activating licenses, see [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#).



No warning is displayed, even though the temporary license will expire within one month.

Reason: The expiry warning message appears only when someone uses the expiring license. Probably there are several permanent licenses (that have been activated first) and some temporary licenses that have been activated after the permanent ones.

When somebody starts Tekla Structures, the system uses licenses in the order of activation. For example, if you have 10 permanent and 2 temporary licenses, all 10 licenses must be in use before someone obtains the temporary license, and receives the warning about the expiring license.



When you try to open the entitlement certificate in Tekla Structures License Administration Tool, nothing is shown.

Reason 1: You have not downloaded the attached entitlement certificate from your e-mail application, but opened the certificate in an Internet browser and saved it as an .html file from the browser.

Solution: Open the e-mail containing the entitlement certificate attachment `EntitlementCertificate.html`. Download the entitlement certificate to the `..\TeklaStructures\License\Server` folder from e-mail. Then try to open it again in **Tekla Structures License Administration Tool** by clicking **Open**.

For more information, see [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#).

Reason 2: The virus protection system of your computer has removed the Trimble Solutions logo from the license entitlement certificate.

Solution: The sender of the entitlement certificate should zip the entitlement certificate file. Unzip the entitlement certificate file on the computer where the licenses are going to be activated.



License was activated successfully, but the following error message is displayed when you run the command line command "serveractutil -view": "Activation library initialization failed."

Reason: The license server installation was not successful.

Solution: Do the following:

1. Stop other FlexNet licensing services in **LMTOOLS**.
2. Run the `installanchorservice.exe` at the command prompt, restart the license server.

After doing this you will be able to activate your licenses and use Tekla Structures.

If the above did not work, you need to uninstall the license server and reinstall the recent version once again with administrator rights.

For more information about uninstalling and installing the license server, see [Uninstall the license server manually and Installing Tekla Structures license server \(page 43\)](#).



The automatic notification functionality in Tekla Structures License Administration Tool does not work: nothing happens when you click the Notify Server button

Reason: One of the reasons why the **Notify Server** button does not work in **Tekla Structures License Administration Tool** might be that Tekla Structures Licensing Service is not started on the computer.

Solution: To solve the issue, open Windows **Control Panel --> Administrative Tools --> Services**. Ensure that the **Tekla Structures Licensing Service** status is **Running**. The **Startup Type** of the service should be set either to **Automatic** or to **Automatic (Delayed Start)**.



Your licenses no longer appear as activated licenses, or old version licenses are activated, but they do not work.

Reason: Windows system restore may cause problems for licensing. For more information, see [Windows system restore might affect your model and licensing](#).

Useful links

For more information about the status of the activated licenses in the trusted storage, see instructions in the following Support Articles in Tekla User Assistance:

Checking the status of the activated licenses in the trusted storage

Checking the status of the activated licenses in the trusted storage (including borrowing info)

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Problems in Tekla Structures license deactivation



Unable to select a license for deactivation.

Activated Licenses											
	Deactivate	Trust Status	Enabled	Quantity	Borrowed	Configuration	Version	Expiration Date	Type	Activation ID	Order ID
				1	1	SteelDetailing...	20	31.5.2014	Enter...	4873-A2E9-...	Tekla HQ

Reason: You cannot select a license for deactivation if the license is still borrowed.

Solution: Return the license and then deactivate the license.

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[Deactivating Tekla Structures licenses \(page 82\)](#)

Problems in Tekla Structures license borrowing



Unable to select a date from the calendar in the Borrow Until box.

Reason: The maximum borrowing period is one month.

Solution: In **Tekla Structures License Borrow Tool**, select a date that is within one month from the date of borrowing:

1. Go to **Tekla Structures License Borrow --> Tekla Structures License Borrow Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. In the **Products** area, click the **Borrow Until** box and select from the calendar the expiration date that is within one month from the date of borrowing.



Tekla Structures does not start up with the borrowed license.

Problem: You borrowed a license and disconnected from the network. When you open Tekla Structures, the **Tekla Structures - Connect to License Server** dialog box is displayed, but Tekla Structures does not find the borrowed license.

Solution: If Tekla Structures does not start up with the borrowed license, please type only an asterisk character (*) into the **Server address** box in the **Tekla Structures - Connect to License Server** dialog box.

This will force Tekla Structures to search for all possible locations for the license. It might take some time until it finds the license.



The computer that is running a borrowed license crashed, what should I do?

Solution: If your computer only needs rebooting, you can use the borrowed license again after rebooting. If your computer completely breaks down, the license will automatically be available on the license server when the borrowing period expires.

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[Borrowing Tekla Structures licenses for offline use \(page 109\)](#)

Problems in Tekla Structures license trusted storage



A license cannot be used.



Reason: The **Host (H)** trust status of your license is not trusted. Hardware setup of your server computer has changed radically.

Solution: The licenses with the untrusted **H** trust status cannot be repaired. Contact your local Tekla Structures support.

We recommend that you run your license server on a proper server computer that is regularly maintained. You need to deactivate your licenses before performing any maintenance actions on your server computer. However, unnecessary deactivations should be avoided due to technical and security reasons.

For more information, see [Repair a Tekla Structures license \(page 84\)](#).



A license cannot be used.

Trust Status



Reason: The **Time (T)** trust status of your license is not trusted. Time settings of your server computer have changed radically.

Solution: You need to set the correct system date and time and after that repair the license in **Tekla Structures License Administration Tool**.

Do not manipulate system clock settings of the server computer that has activated licenses.

For more information, see [Repair a Tekla Structures license \(page 84\)](#).



A license cannot be used.

Trust Status



Reason: The **Restore (R)** trust status of your license is not trusted. Your backup system may have overwritten some licensing information.

Solution: You need to repair the license in **Tekla Structures License Administration Tool**.

We recommend that you configure your system backup settings so that the existing licensing software, tools and files are not automatically overwritten or replaced with the restored ones.

For more information, see [Repair a Tekla Structures license \(page 84\)](#).

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[Repair a Tekla Structures license \(page 84\)](#)

Problems using LMTOOLS in Tekla Structures licensing



LMTOOLS does not reread the license file.

Reason: Rereading the license file does not work if you are running a licensing service locally on your computer and you are connected to another license server at the same time.

Solution: You need to stop and restart the licensing service. Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.

2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. On the **Start/Stop/Reread** tab, click **Stop Server** and wait a few seconds for the service to stop.
4. Click **Start Server**.



LMTOOLS is unable to stop the license server, and the message "Unable to Stop Server" is displayed in the LMTOOLS message bar.

Reason: You may have selected an incorrect licensing service.

Solution: You need to select **Tekla Structures Licensing Service** as the licensing service. Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. Go to the **Start/Stop/Reread** tab, and click **Stop Server**.
4. If this does not help, select the **Force Server Shutdown** check box and click **Stop Server** again.



LMTOOLS is unable to stop the license server.

Reason: You did not run **LMTOOLS** with administrator rights.

Solution: Run **LMTOOLS** with administrator rights. For more information, see [Rights needed for performing administrator's tasks in Tekla Structures licensing \(page 35\)](#).



Starting or stopping the server or rereading the license file cannot be performed, and the message "No Server Selected" is displayed.

Reason: You have not selected the licensing service.

Solution: You need to select **Tekla Structures Licensing Service** as the licensing service. Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. Go to the **Start/Stop/Reread** tab and start or stop the server or reread the license file.



Starting or stopping the server or rereading the license file is not possible.

The status list in **LMTOOLS** indicates that the license server manager (lmgrd) has not been started: "Error getting status: Cannot connect to license server system. The license server manager (lmgrd) has not been started yet, the wrong port@hostname or license file is being used, or the port or hostname in the license file has been changed".

Reason: **LMTOOLS** points to the wrong lmgrd.exe.

Solution: You need to modify the settings in **LMTOOLS**. Do the following:

1. Go to **Tekla Structures Licensing --> LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. Go to the **Config Services** tab, and click **Browse** to locate the lmgrd.exe file.

By default, the file is installed in the `..\TeklaStructures\License\Server` folder.

4. Click **Save Service**.
5. Go to the **Start/Stop/Reread** tab and click **Stop Server**.
6. Click **Start Server** to restart the server.

The changes are applied.



LMTOOLS does not show the licensing service status.

The status list on the **Server status** tab in **LMTOOLS** indicates that the license file cannot be found: "Error getting status: Cannot find license file. The license files (or license server system network addresses) attempted are listed below. Use LM_LICENSE_FILE to use a different license file, or contact your software provider for a license file".

Reason: You are trying to perform a status enquiry of a licensing service that is not running.

Solution: You need to start **Tekla Structures Licensing Service**. Do the following:

1. Go to **Tekla Structures Licensing --> LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. Go to the **Start/Stop/Reread** tab and click **Start Server**.
4. Go to the **Server Status** tab and click **Perform Status Enquiry** again.


See also

[Install Tekla Structures license service - manual installation \(page 46\)](#)

[Configure Tekla Structures license server manually \(page 50\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)


Problems in starting Tekla Structures

 **Tekla Structures does not start. The following message is displayed: "Error when connecting to the license server. Contact your system administrator or try another server".**

Reason: You are not connected to the license server.

Solution: Check the following:

- Check that your network connection is working.
- Check that you have entered the license server name correctly.
For more information, see [Connect Tekla Structures to the license server \(page 76\)](#).
- Check that license information in **LMTOOLS** is correct. If not, reread the license file in **LMTOOLS** and try to start Tekla Structures again.
For more information about **LMTOOLS**, see LMTOOLS options and settings used in Tekla Structures licensing.

 **Tekla Structures does not start. The following message is displayed: "License server system does not support this feature".**

Reason: Your license server may not be up to date.

Solution: Update the status of your license server. Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system. Start **LMTOOLS** using administrator rights.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. On the **Start/Stop/Reread** tab, click **Stop Server** and wait a couple of seconds.
4. Click **Start Server**.

5. Start Tekla Structures.

If the problem still persists, contact your local Tekla Structures support. The support will need a copy of the following files: `tekla.lic`, `tekla.opt`, and `tekla_debug.log` files.



Tekla Structures does not start occasionally.

The following message is displayed: "Cannot connect to license server system. The license server manager (lmgrd) has not been started, the wrong port@host or license file is being used, or the port and hostname in the license file has been changed".

Reason: There may be communication problems between your license server and Tekla Structures client computers if the port of the license server is not defined.

Solution: Define the port for the license server. Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. On the license server computer, define a free port for the license server in the `tekla.lic` file. For more information, see [Modify the license file tekla.lic manually \(page 49\)](#).
4. Go to the **Start/Stop/Reread** tab and stop the license server by clicking **Stop Server**.
5. Click **Start Server**.
6. Start Tekla Structures on a client computer.
7. In Tekla Structures, click **Tools** --> **Change License Server**. Define the port and hostname of the license server.
8. Close Tekla Structures.
9. Repeat steps 5 to 7 on all Tekla Structures client computers.

See also

[Connect Tekla Structures to the license server \(page 76\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Problems with options file tekla.opt



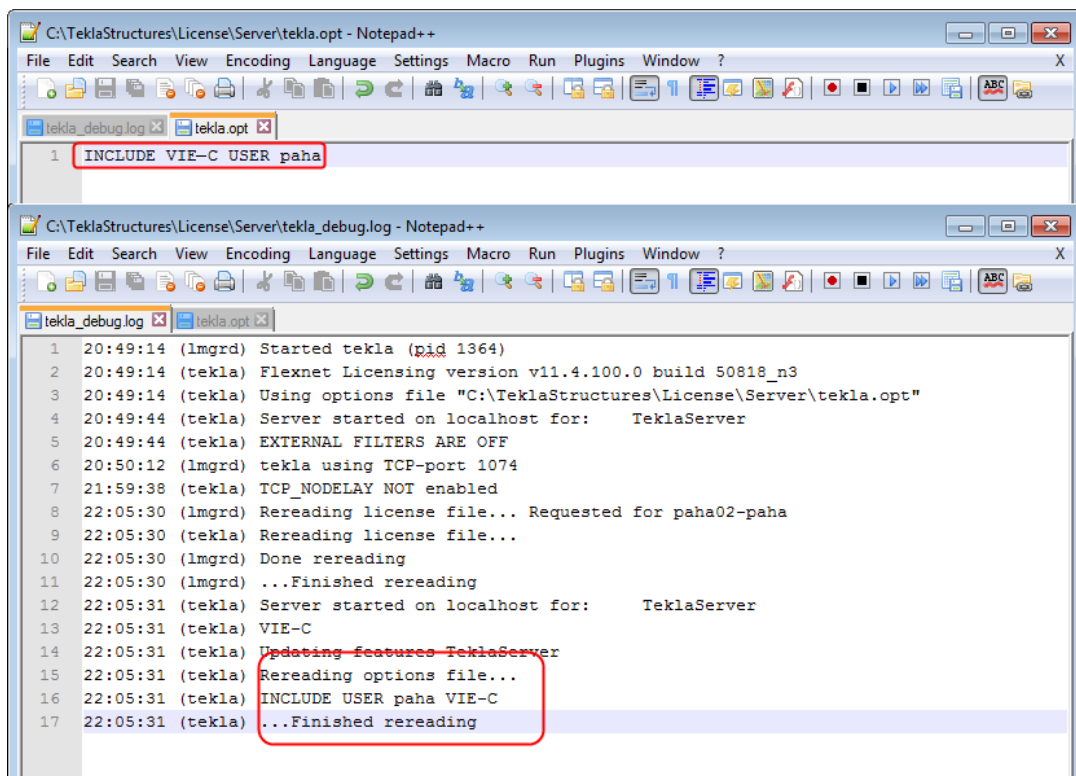
The tekla.opt file does not take effect.

Reason: The licensing service has not read the options file.

Solution: Do the following:

1. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. On the **Service/License File** tab, ensure that **Configuration using services** and **Tekla Structures Licensing Service** are selected.
3. On the **Start/Stop/Reread** tab, click **ReRead License File**.
4. Browse to the `..\TeklaStructures\License\Server` folder and open the `tekla_debug.log` file and the `tekla.opt` file with a text editor.
5. Check that the `tekla_debug.log` file contains the same keyword strings as the `tekla.opt` file.

If this does not help, please contact your local support.



```
C:\TeklaStructures\License\Server\tekla.opt - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
tekla_debug.log x tekla.opt x
1 INCLUDE VIE-C USER paha

C:\TeklaStructures\License\Server\tekla_debug.log - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
tekla_debug.log x tekla.opt x
1 20:49:14 (lmgrd) Started tekla (pid 1364)
2 20:49:14 (tekla) Flexnet Licensing version v11.4.100.0 build 50818_n3
3 20:49:14 (tekla) Using options file "C:\TeklaStructures\License\Server\tekla.opt"
4 20:49:44 (tekla) Server started on localhost for: TeklaServer
5 20:49:44 (tekla) EXTERNAL FILTERS ARE OFF
6 20:50:12 (lmgrd) tekla using TCP-port 1074
7 21:59:38 (tekla) TCP_NODELAY NOT enabled
8 22:05:30 (lmgrd) Rereading license file... Requested for paha02-paha
9 22:05:30 (tekla) Rereading license file...
10 22:05:30 (lmgrd) Done rereading
11 22:05:30 (lmgrd) ...Finished rereading
12 22:05:31 (tekla) Server started on localhost for: TeklaServer
13 22:05:31 (tekla) VIE-C
14 22:05:31 (tekla) Updating features TeklaServer
15 22:05:31 (tekla) Rereading options file...
16 22:05:31 (tekla) INCLUDE USER paha VIE-C
17 22:05:31 (tekla) ...Finished rereading
```

See also

[Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Problems in Tekla Structures licensing: Error codes and their descriptions

Error 6

Problem: License library initialization failed with error: Activation Library Initialization error #6. Please, contact software vendor to resolve the problem.

Reason: Tekla Structures license server installation folder contains .dll files that are from the previous Tekla Structures license server version.

Solution: To resolve the problem, do the following:

1. Close **Tekla Structures License Administration Tool** and stop the Tekla Structures license server in **LMTOOLS** by clicking **Stop Server** on the **Start/Stop/Reread** tab.
2. Uninstall all existing Tekla Structures license server installations.
3. If the Tekla Structures license server installation folder contains any .dll files, remove the files manually.
4. Now you can install Tekla Structures license server to the same folder where the uninstalled version was.

For more information about license server installation, see [Installing Tekla Structures license server \(page 43\)](#).

NOTE Deactivation is not needed in this case. Licenses are kept safe in a specific Flexera Software location outside Tekla Structures license server installation directory.

Error 20

Problem: Error 20: The licensing service is not installed.

Reason: The error occurs when you are starting **Tekla Structures License Administration Tool**, or when you are trying to run `serveractutil.exe` command line tool.

Solution: If you selected the **Manual** option for Tekla Structures licensing service installation then you need to manually install FLEXnet licensing service:

1. If you have some other FlexNet licensing service running on the server, stop it before entering the commands.
2. Go to the **Start** menu or **Start screen**, depending on your Windows operating system, and open **Command Prompt** as an administrator.
3. At the command prompt, type the following commands:

```
cd /D full_path_to_installation_directory
```

For example, if you install Tekla Structures license server to the default folder, you need to enter `cd /D C:\TeklaStructures\License\Server.`


`installanchorservice.exe`

Error 109

Problem: There are no activated licenses to return. Another program may have modified the activated licenses rights concurrently. (109) Unable to return as there is no licenses in Trusted Storage.

Reason: The trusted storage has been modified, probably by some other program.

Trust Status

 The red Restore (R) trust status of your license is not trusted. The license is broken, therefore it cannot be returned.

Solution: The license will become available on the server machine automatically when the borrow period ends.

Error 123 or error 50030

Problem: Message 1: Row n: An error occurred but FLEXnet Licensing did not return an error number. (123)

Message 2: Failed to load trusted storage or specified ASR. (50030)

Reason: These error messages indicate that the trusted storage cannot be loaded, and your trusted storage is corrupted.

Solution: Your licenses need to be replaced. Contact your local Tekla Structures representative for a replacement along with some instructions.

Error 1316

Problem: License server installation fails.

The following message is displayed: "A network error occurred while attempting to read from the file C:\Documents and Settings\paha\Local Settings\Application Data\Downloaded Installations\...\Tekla Structures License Server v1.01.msi".

Reason: You have an older version of the license server installed.

Solution: Uninstall the old version and then install the new version of the license server.

For more information about uninstalling the server, see Uninstall the license server manually.

Error 1316

License activation fails, and the following message is displayed: "Unspecified FLEXnet Error with code 7174 Only deployed entitlement line item can be fulfilled."

Reason: You are trying to activate an obsolete license.

Solution: You should have received a new entitlement certificate from your local Tekla Structures representative. Try the activation again with the new entitlement certificate, and move the old obsolete entitlement certificate in an archive folder.

For more information, see [Activate Tekla Structures licenses using automatic server notification \(page 72\)](#).

Error 7284

Problem: Unspecified FLEXnet Error with code 7284. Cannot perform support actions on inactive fulfillment record

FID_XXXXXXXXXXXXXXXXXXXX.

Reason: Trusted Storage has been restored from an old backup copy. The license with fulfillment ID FID_XXXXXXXXXXXXXXXXXXXX has been deactivated already.

Solution: You need to restore trusted storage files from the most recent backup copy and then repair licenses if needed.

For more information about repairing licenses, see [Repair a Tekla Structures license \(page 84\)](#).

Error 7288 and error 111

Message 1: The activation of the fulfillment is denied by the activation policy because fulfill count exceeded the available seat count.

Message 2: The activation of the fulfillment is denied by the activation policy because number of copies left is zero.

Reason 1: You may be trying to activate some licenses that have been activated before on another server/computer.

Solution: Deactivate the licenses from the other computer, and then activate the licenses on the new server/computer.

Reason 2: You may be trying to activate a renewed temporary license or permanent licenses without deactivating the previous linked activated licenses.

Solution: Deactivate the existing temporary licenses first and then activate the succeeding linked licenses.

For more information about deactivating licenses, see [Deactivate Tekla Structures licenses \(page 83\)](#).

Error 7343

Problem: Unspecified FLEXnet Error with code 7343 Entitlement line item has expired on <date> <time>.

Reason: License has expired. It is not possible to activate or repair expired licenses.

Error 7466

Problem: License deactivation fails, and the following message is displayed: "The return of the fulfillment is denied by the return policy because max return exceeded".

Reason: You have deactivated the license too many times in a 30 days period.

Solution: You can deactivate the license again when 30 days have passed since the first deactivation of the license in the past 30 days. The number of deactivations of a license within a given time period is limited due to technical and security reasons.

Error 7581

Problem: Unspecified FLEXnet Error with code 7581. Online Return/Repair Request for the activationId XXXX-XXXX-XXXX-XXXX-XXXX-XX is not originated from the original client machine.

Reason and solution: The computer is not the same where the licenses were originally activated, and you need to return/repair licenses from the original computer. Another reason might be that the computer has changed so much that activation server at Trimble Solutions no longer recognizes it as the same one, in which case you need to replace your licenses.

For more information about returning and repairing licenses, see [Return a borrowed Tekla Structures license \(page 114\)](#) and [Repair a Tekla Structures license \(page 84\)](#).

Error 9999

Problem, reason and solution:: Licensing server at Trimble Solutions is down. Wait for a while and retry.

Error 50005

Problem: Error (5005) License Activation failed - Initialization of API Failed.

Problem: The activated licenses are not visible and it is not possible to activate new licenses.

Reason: The installation package has failed to initialize or register some of the software components.

Solution: Do the following:

1. Log in with administrator's rights.
2. Close **License Administration Tool**.
3. Stop Tekla Structures license server and other license servers on the same computer on the **LMTOOLS --> Start/Stop/Reread** tab.
4. Go to `..\TeklaStructures\License\Server` folder.
5. Double-click `installanchorservice.exe`.

6. Start Tekla Structures license server and other license servers on the same computer on the **LMTOOLS** --> **Start/Stop/Reread** tab.
7. Open **License Administration Tool**. The message should not be displayed anymore.

Error 50018

Problem: License borrowing fails.

Reason: Wrong product ID file is used.

Solution: Do one of the following:

- Export a product ID file in **Tekla Structures License Administration Tool** and use the file for borrowing.

Error 50033

Problem: License borrowing fails.

Reason 1: Your license server may not have up-to-date license information.

Solution: In **LMTOOLS**, stop and then restart the server.

Reason 2: The `INCLUDE` keyword in the options file prevents the borrowing of the configuration.

Solution: You need to add a dummy user "ACTIVATED LICENSE(S)" into the group of the included users to enable the borrowing. Do the following:

1. Open `tekla.opt` using a text editor.
2. Add "ACTIVATED LICENSE(S)" in the group of the included users, for example:

```
GROUP steel "ACTIVATED LICENSE(S)" user1 user2 user3
user4

INCLUDE STD-C GROUP steel
```

3. Save the changes you made in `tekla.opt`.
4. In **LMTOOLS**, reread the license file or stop the server and then start the server.

Error 50035

Problem: License borrowing fails.

Reason: The user tried to borrow a license that is not activated on the license server. For example, the user tried to borrow a version 20 license and there are only version 21 licenses activated on the server.

Solution: Do the following:

- Check that the product ID file is up to date. If not, export a new product ID file in **Tekla Structures License Administration Tool** (**File** --> **Export**) and send this file to the user for borrowing. Then ask the user to save the

new product ID file, open the **Tekla Structures License Borrow Tool**, click **Open** and browse for the new .tpi file and try borrowing again.

- Check that your license information is up to date in **LMTOOLS**. If not, reread the license file.

Error 50036

Problem: License borrowing fails.

Reason: You are not allowed to borrow the license.

Solution: Do one of the following:

- The options file (tekla.opt) needs to be modified so that the borrowing of the license is allowed. For more information, see [Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#)
- Borrow another license.

Error 50037

Problem: License returning fails.

Reason: You tried to return the license to a different license server than it was borrowed from.

Solution: You need to return the license to the same license server that it was borrowed from. Do the following:

1. Go to **Tekla Structures License Borrow --> Tekla Structures License Borrow Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. In the **Borrow from License Server** dialog box, enter the name of the license server where you originally borrowed the license from and click **OK**.
3. Select the **Return** check box in the **Borrowed Licenses** area to select the license for returning.
4. Click the **Return** button to return the license.

After successful returning of licenses, the **Borrowed Licenses** area is updated.

Error 50040 or error 50041

Error 50040 or error 50041, problem 1: License activation, deactivation or repairing fails

Reason: Your license server was not able to connect to activation server at Trimble Solutions correctly. Usually this is a temporary problem in online activation.

Solution: Do the following:

- Check that your Internet connection is working. An Internet connection is needed during license activation and deactivation. A low connection speed may also cause errors.
- Close **Tekla Structures License Administration Tool** and try to activate the license a while later.
- Try to activate another license.
- Your firewall may block the activation communication. Check your firewall settings. For more information, see [Allowing Tekla Structures license server to operate through Windows Firewall \(page 52\)](#).
- Check that you have the latest Tekla Structures license server version.
- This error could be caused by unfinalized Windows updates on the server computer. Reboot the server and try again.
- Your Windows login user name may contain special characters. Try to log in with another user name, for example, administrator.
- Check that your Internet connection is working.
- Contact your local Tekla Structures support and ask for a manual activation.

Error 50040 or error 50041, problem 2: License borrowing fails.

Reason: You are not connected to the license server.

Solution: Do the following:

- Check that your network connection is working.
- Start **Tekla Structures License Borrow Tool** and check that you have entered the correct license server information in the **Borrow from License Server** dialog box.

See also

[View and diagnose errors in Tekla Structures license activation, deactivation and borrowing \(page 86\)](#)

[Problems in Tekla Structures license activation \(page 90\)](#)

[Problems in Tekla Structures license borrowing \(page 95\)](#)

[Problems in Tekla Structures license deactivation \(page 95\)](#)

3.7 Borrowing Tekla Structures licenses for offline use

When you want to work offline, you can borrow an activated license from the Tekla Structures license server. The borrowed license is transferred from the license server to your computer, so it is not available for other users during the borrowing. Also a product file is needed for borrowing licenses. You do not

need to borrow a license for offline use if you have installed a license server on your computer.

You can borrow Tekla Structures licenses for offline Tekla Structures use in **Tekla Structures License Borrow Tool**:

- The version of **Tekla Structures License Borrow Tool** should be the same as the version of Tekla Structures license server.
- The maximum license borrow duration is one month. You define the borrow expiration date when you borrow the license.
- The borrowed license is reserved for you until the borrowing period expires, or until you return the license, depending on which comes first.
- You need a network connection to the license server while you are borrowing or returning a license. You can also borrow licenses through a VPN connection. After borrowing, you can turn off the network or VPN connection and work with the borrowed license.
- When you want to stop borrowing a license, return it to the license server.

Product ID file

A product ID (.tpi) file is needed for borrowing licenses. The product ID file contains all the information needed in license borrowing. The administrators need to provide the offline users with a customized product ID. For more information, see [Provide offline users with a customized product ID file \(page 111\)](#).

When you install **Tekla Structures License Borrow Tool**, the standard.tpi file is automatically installed in the `..\TeklaStructures\License\Borrow` folder. This default product ID file lists all Tekla Structures configurations and their product IDs. However, you can only borrow the licenses that are activated for you on the license server. If you want that **Tekla Structures License Borrow Tool** only displays the activated licenses, ask your license server administrator for a customized product ID file and open it in **Tekla Structures License Borrow Tool** when you start license borrowing.

How does the license borrowing work

License borrowing works in the following way:

1. The administrator installs and sets up a Tekla Structures license server on a separate server computer, and activates the licenses for borrowing.
2. The user installs the **Tekla Structures License Borrow Tool**, connects the computer with Tekla Structures to the Tekla Structures license server, and opens the product ID file to see the licenses that are available for borrowing.

For more information about setting up license borrowing, see [Set up Tekla Structures License Borrow Tool for Tekla Structures offline use \(page 112\)](#).

3. The user borrows licenses from the license server.
For more information about borrowing licenses, see [Borrow a license from Tekla Structures license server \(page 113\)](#).
4. The user waits for the license expiration date, or returns the licenses to the server before the expiration date.
For more information about returning borrowed licenses, see [Return a borrowed Tekla Structures license \(page 114\)](#).

See also

[Modify Tekla Structures license access rights \(tekla.opt\) \(page 77\)](#)

[Problems in Tekla Structures license borrowing \(page 95\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

Provide offline users with a customized product ID file

Tekla Structures License Borrow Tool needs the activation IDs of the licenses during borrowing. When you export a product ID file (.tpi) in **Tekla Structures License Administration Tool**, the activation IDs of the activated licenses are written in the file. Then you can send the file to offline users.

Because the default product ID file lists all configurations, the offline users need to have a customized product ID file that only lists the activation IDs of the activated licenses available for borrowing. You need to export the product ID file on the license server computer using **Tekla Structures License Administration Tool** and send the file to the users who borrow licenses. The activation IDs are encrypted.

WARNING Product ID files are not updated automatically. If you deactivate borrowable licenses or activate new licenses for borrowing, you need to export a new product ID file and send it to Tekla Structures offline users who borrow licenses.

To export the product ID file on the Tekla Structures license server computer:

1. Go to **Tekla Structures Licensing --> Tekla Structures License Administration Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. Click **Export**.
3. In the **Save Product ID file As** dialog box, enter the name of the product ID file or keep the default file name, select a folder where you want to save the file and click **Save**.

If the name of the file is `standard.tpi` and the file is saved in the `.. \TeklaStructures\License\Borrow` folder on the user's computer,

the file is opened automatically when the user starts **Tekla Structures License Borrow Tool**.

4. Send the product ID file to the Tekla Structures users who need to borrow licenses and inform the users about the usage of the file.

If the name of the file is `standard.tpi` and the file is saved in the `.. \TeklaStructures\License\Borrow` folder on the user's computer, the file is opened automatically when the user starts **Tekla Structures License Borrow Tool**.

See also

[Set up Tekla Structures License Borrow Tool for Tekla Structures offline use \(page 112\)](#)

Set up Tekla Structures License Borrow Tool for Tekla Structures offline use

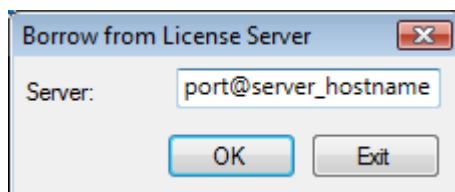
You can use Tekla Structures offline by borrowing Tekla Structures licenses with **Tekla Structures License Borrow Tool**.

Before you start, download and install the latest **Tekla Structures License Borrow Tool** from the [Tekla Downloads](#) product download page.

You can use the same **Tekla Structures License Borrow Tool** for borrowing licenses for different Tekla Structures versions. The version of **Tekla Structures License Borrow Tool** should be the same as the version of Tekla Structures license server.

To set up **Tekla Structures License Borrow Tool** for Tekla Structures offline use:


1. Go to **Tekla Structures License Borrow** --> **Tekla Structures License Borrow Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
2. In the **Borrow from License Server** dialog box, enter the port number and the hostname (computer name) of the license server in the **Server** box in the format `port@hostname`, for example, `27007@server_hostname`.



3. Click **OK**.
4. If you administrator has sent you a customized product ID file, open the file now and update the list of accessible licenses:

- a. Click **Open**.
- b. In the **Select Product ID file** dialog box, select the product ID file and click **Open**.

The **Products** area in the **Tekla Structures License Borrow Tool** is updated.

Products					
Borrow Until	Configuration	Version	Activation ID In Use	Start Date	Expiration Date
19.5.2015	SteelDetailing	20		1.5.2015	31.5.2015

5. In the **Tekla Structures License Borrow Tool** dialog box, click **Language** and change the language of the **Tekla Structures License Borrow Tool** user interface, if necessary.

NOTE When you start Tekla Structures, and if Tekla Structures does not start with the borrowed license, enter an asterisk (*) in the **Server address** box of the **Connect to License Server** dialog box. This will force Tekla Structures to search for all possible locations for the license. This may take a while.

See also

[Problems in Tekla Structures license borrowing \(page 95\)](#)

Borrow a license from Tekla Structures license server

In **Tekla Structures License Borrow Tool**, you can borrow licenses from Tekla Structures license server when you want to work offline. Borrow the license on the same computer that you will use for offline work.

Before you can borrow a license, you need to install **Tekla Structures License Borrow Tool**, connect the computer with Tekla Structures to the license server and open the product ID file.

For more information about the prerequisites, see [Set up Tekla Structures License Borrow Tool for Tekla Structures offline use \(page 112\)](#).

To borrow a Tekla Structures license:



1. Close Tekla Structures.
2. Go to **Tekla Structures License Borrow** --> **Tekla Structures License Borrow Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
3. In the **Borrow from License Server** dialog box, enter the port number with the host name (computer name) in format `port@host` in the **Server** text box, for example:

27007@HOST_NAME

You need to use exactly the same port and host name as in the **Connect to License Server** dialog box when starting Tekla Structures.




4. Click **OK**.
5. Click the **Open** button.
6. Select the product ID file and click **Open**.
7. In the **Products** area, click the **Borrow Until** box and select the expiration date for the borrowing period from the calendar.

The maximum borrowing period is one month. The exact maximum borrow period varies between 29 to 32 days depending on the borrowing date.

Products						
Borrow Until	Configuration	Version	Activation ID In Use	Start Date	Expiration Date	
19.5.2015 	SteelDetailing	20		1.5.2015	31.5.2015	

8. Click the **Borrow** button to borrow the license.

The borrowing progress is displayed in the **Borrowing License(s)** dialog box. After successful borrowing, the **Borrowed Licenses** area shows the borrowed license.

Borrowed Licenses						
Return	Trust Status	Enabled	Configuration	Version	Borrow Until	Borrowed From
			SteelDetailing	20	19.5.2015	Z-USERX

9. To ensure that the borrowing succeeded, disconnect your computer from the license server and start Tekla Structures with the borrowed license.

See also

[Problems in Tekla Structures license borrowing \(page 95\)](#)

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

[View and diagnose errors in Tekla Structures license activation, deactivation and borrowing \(page 86\)](#)

[Borrowing Tekla Structures licenses for offline use \(page 109\)](#)

Return a borrowed Tekla Structures license

You can return a borrowed license back to the Tekla Structures license server before the expiration date.

A borrowed license is automatically available on the license server on the day following the expiration date.

However, the **Borrowed Licenses** area in **Tekla Structures License Borrow Tool** is not automatically updated. The license should be returned to the server that has the same name as the name of the server from which the license was borrowed. We recommend that you always return the expired licenses when you want to stop borrowing a license.

To return a borrowed Tekla Structures license:

1. Ensure that you are connected to the license server.
2. Close Tekla Structures.
3. Go to **Tekla Structures License Borrow --> Tekla Structures License Borrow Tool** through the **Start** menu or **Start screen**, depending on your Windows operating system.
4. Select the **Return** check box in the **Borrowed Licenses** area to select the license for returning.
5. Click the **Return** button to return the license.

After successful returning of licenses, the **Borrowed Licenses** area is updated.

See also

[Problems in Tekla Structures licensing: Error codes and their descriptions \(page 102\)](#)

4 Create and distribute customized configurations

To create your customized Tekla Structures configurations and use them in different projects and on different computers:

- Get familiar with the different configuration files and some basic ways to change how Tekla Structures works, see [Tekla Structures setup guidelines for administrators \(page 116\)](#).
- You can use Trimble's default settings as well as create your company's general settings and project-specific settings, see [Environment, company and project settings for administrators \(page 129\)](#).

Many of the configurations you distribute are closely linked to working in Tekla Structures and you find the instructions related to the configuration files you can distribute as part of the documentation of each feature. Additionally, you can find some general configuration tasks in this section:

- You can create and distribute a customized ribbon interface as explained in [Distribute custom ribbons using a firm or environment folder \(page 134\)](#) and [Distribute custom tabs using a firm or environment folder \(page 135\)](#).
- You can customize the catalogs of [materials \(page 138\)](#), [profiles \(page 146\)](#), [shapes \(page 200\)](#) and [bolts \(page 205\)](#).

4.1 Tekla Structures setup guidelines for administrators

Tekla Structures administrator is the person responsible for ensuring that the company standards are used and set up in Tekla Structures. The following sections explain how you can customize Tekla Structures.

Customizing Tekla Structures

Each new version of Tekla Structures introduces new features and functionalities to improve the overall process used for completing a project. Tekla Structures has multiple environments to suit the needs and requirements of specific markets. Many features are localized in each Tekla Structures version. Most of the changes in versions are focused on making the default saved attributes more consistent, organized, simplified, and practical.

Your local technical team is dedicated to improving your knowledge and experience of each new version. The team aims at enhancing your user experience of Tekla Structures by performing tasks that have been identified as essential by the existing users, new users, and potential users.

Before you start customizing Tekla Structures to suit the needs of your company and your projects, collect the needed information, such as drawing standards, used profiles, grades and materials, company logos, and naming conventions.

The overall localization of Tekla Structures can be divided into four different layers:

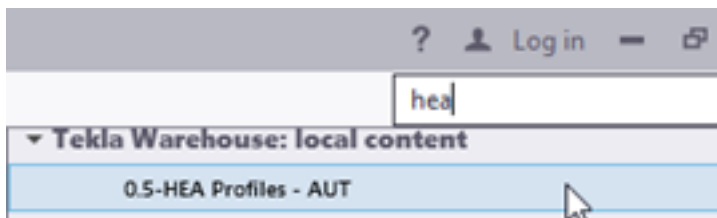
- Tekla Structures environment
- Company-level settings
- Project-level settings
- Multi-user settings

The three last ones are mainly managed by company administrators.

Setting up the standard that a company uses, and the standards that a specific project needs will make the designing process much more efficient because the end user can concentrate on the design process.

Tekla Warehouse

[Tekla Warehouse](#) has a lot of additional content, such as application tools and environment content. Tekla Warehouse offline offering that comes as an option with Tekla Structures installation has all the catalog content of environments, such as profiles, bolts, materials, and reinforcement. You can access those inside Tekla Structures via **Quick Launch**.



In Tekla Warehouse, you can find the catalog content under **Tekla Structures collections**. From there all catalog content is installed into the currently open model. If you did not install the offline content with the Tekla Structures installation, you can later search for the needed area-specific offline

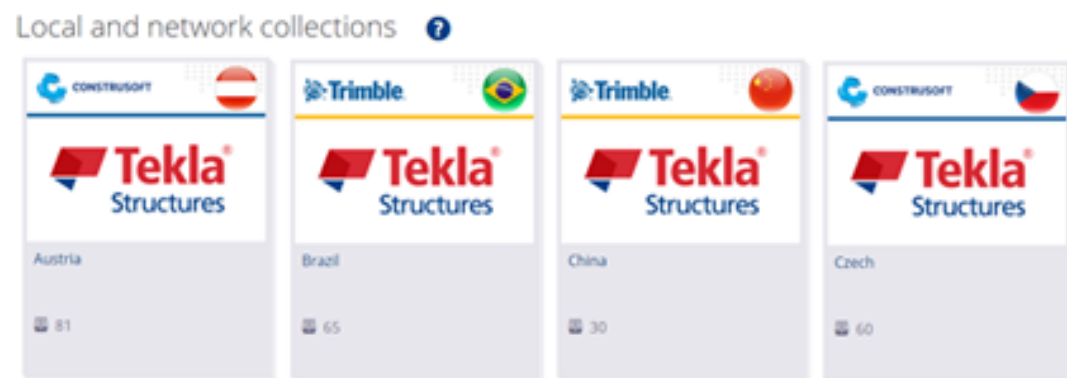
collections from the online Tekla Warehouse, and install them. The content is in .tsep packages that are installed when opening Tekla Structures.

You can also create a local collection for your company, and share it for your organization in your internal network. You can manage the access rights on the folder and collection level in the `collections.json` file on each user's computer. Copy the file to the same location on each user's computer. The file is located in `C:\Users\Public\Public Documents\Tekla\Tekla Warehouse\collections.json`.

The image below shows an example of the collection paths with four Tekla Structures collections:

```
{
  "collections":
  [
    "\"\\\\Server1\\\\Tekla Warehouse\\\\OfflineContent\\\\austria\"",
    "\"\\\\Server1\\\\Tekla Warehouse\\\\OfflineContent\\\\brazil\"",
    "\"\\\\Server1\\\\Tekla Warehouse\\\\OfflineContent\\\\china\"",
    "\"\\\\Server1\\\\Tekla Warehouse\\\\OfflineContent\\\\czech\"",
  ]
}
```

In Tekla Warehouse the collections are found after mapping under **My collections** --> **Local and network collections**.

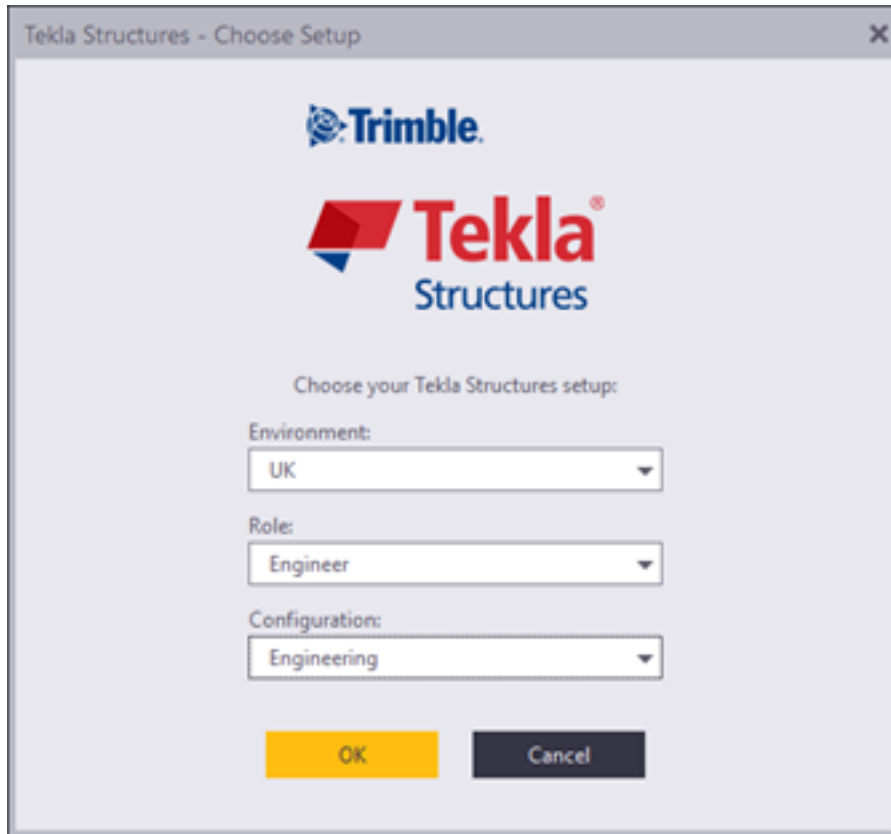


Overview of environments, roles and licenses

Tekla Structures is one product that has many different configurations. The licenses you have determine which configurations you can use.

A Tekla Structures **environment** is set up for the materials, grades, profiles, drawing settings, component settings, .ini file settings that are used in a specific market. There are 33 different environments in Tekla Structures. By choosing a specific environment when starting Tekla Structures you will get the settings for that market. When installing Tekla Structures, you can select the environments that you want to use. You can add missing environments later.

The blank project listed in the environments is an empty platform for your own environment or project settings. It includes standard parametric profiles, undefined bolt, material and rebar grades, basic drawing layouts and so on, which you can complement from your own firm or project folders and Tekla Warehouse.



Some environments give you the opportunity to select a **role** when logging in. The role is independent from the licenses that are used. The purpose of the roles is to make the user interface and settings clearer, easier and faster for the user's tasks.

In practice, this means that settings, filters, reports and the user interface is set up for the role the user has. For example, preloaded settings in a property dialog box that are not relevant for the role, are not shown making the list of options shorter and clearer.

Role selection is primarily meant to be configured by Trimble and reseller localization personnel, and be part of the Tekla Structures installation package. However, advanced users and Tekla Structures system administrators can also create their own roles inside their company organization. Additional environment offering is available in the Tekla Warehouse offline and online collections. Note that you need to have a Trimble Identity for downloading or installing from the online collections. For more information, see [Trimble Identity for Tekla Online services](#)

Folder structure

Tekla Structures software and environments are separated into different locations due to the requirements for Windows certification. By default, the files are installed in the following folders:

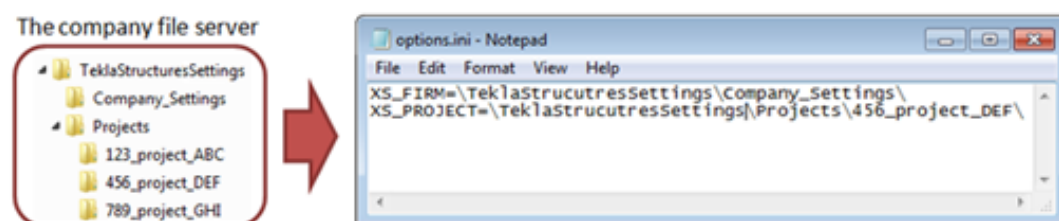
- Software is installed under the `\Program Files\Tekla Structures` folder.
- Environments and extensions are installed under the `\ProgramData\Tekla Structures` folder.
- User settings are installed under the `\Users\<username>\AppData\Local\Tekla Structures` folder.

NOTE If you have an earlier version of Tekla Structures installed on your computer before installing Tekla Structures 2017i, the files will be installed according to the existing structure.

Project and firm folders

Project and firm folders are meant for storing the customized files. For any company, we strongly recommend setting up firm and/or project folders on a shared file server accessible to all users. Having the hierarchy of project and firm folders will make updating company settings, ensuring that everyone uses the same settings in a project, and upgrading to a newer version of Tekla Structures much easier.

All the settings that are used on the company level (for example, company logo and drawing standards) should be stored in a firm folder and all the settings used on a specific project should be stored in the corresponding project folder. Property files are always saved in the `\attributes` folder under the current model folder, like, `\TeklaStructuresModels\<my_building>\attributes`. These files should then be copied to the project or the firm folder.



To use the saved settings in a firm and a project folder, set the path to the folder by using the `XS_PROJECT` and `XS_FIRM` advanced options. These advanced options should be put in the initialization, `.ini`, files. You can have several different `.ini` files. You can define in the Tekla Structures shortcut which `.ini` files to run and which settings to apply.

One of the most important advantages of using firm and project folders is that Tekla Structures does not replace files in the project and firm folders when you install a new version. This means that you retain your customized files without having to cut and paste, or export and import from previous versions. This makes upgrading to a newer version of Tekla Structures easier. When you store files in one place, it is also easier to update the settings and ensure that everyone in a project uses the same settings.

Example:

In the current project, *123_project_ABC*, you have set up the properties for the concrete column, and saved them as *column_ABC*. To make these saved settings available for everyone working in the *123_project_ABC* project, copy *column_ABC.ccl* from the *\attributes* folder under the model folder to the *\123_project_ABC* project folder on your file server. Ensure that everyone in the project has the correct path for the *XS_PROJECT* advanced option in the *.ini* file.

For more information, see [Create project and firm folders \(page 225\)](#) and [Files and folders in Tekla Structures \(page 224\)](#).

Folder search order

When you open a model, Tekla Structures searches for the associated files in specific folders in a set order. It is important that you place the files in the correct folders. Once Tekla Structures finds the associated files, it stops searching. This means that the files that have the same name but are located lower down the search order are ignored.

The basic folder search order is the following:

Folder	Defined by
Model folder	Currently open model
Project	<i>XS_PROJECT</i>
Firm	<i>XS_FIRM</i>
System	<i>XS_SYSTEM</i>

You can define more than one system folder. To do this, enter the file paths of the folders separated by semicolons as the value for the *XS_SYSTEM* advanced option, for example: `set XS_SYSTEM=%XSDATADIR%environments\usimp\system_steel;%XSDATADIR%environments\usimp\system_common.`

There are some exceptions to this search order. The exceptions are listed in [Folder search order \(page 307\)](#).

NOTE Do not store customized files in the system folder. Tekla Structures replaces these files when you install a new version.

Initialization files

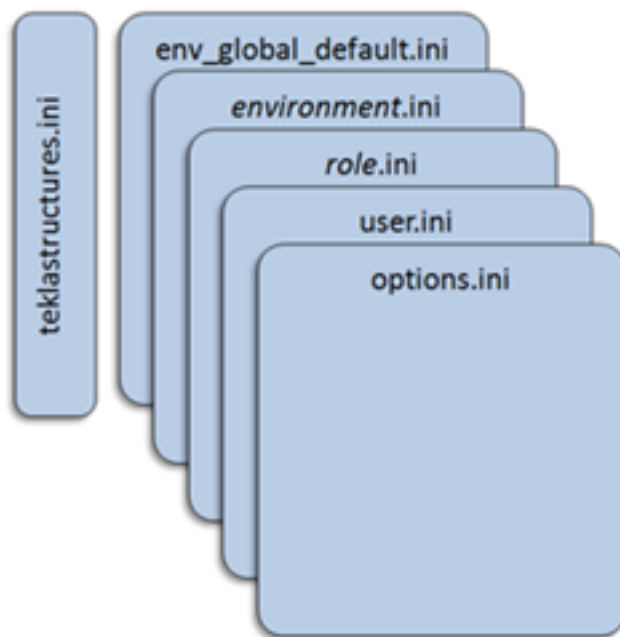
[Initialization files \(page 226\)](#) (.ini) are used for launching Tekla Structures. They can contain many advanced options that you can use to configure Tekla Structures for different standards and your own style of working. Tekla Structures automatically creates the necessary .ini files during installation. The number of .ini files it creates depends on how many country-specific environments you choose to install.

Why are .ini files needed?

There are numerous settings to be made when Tekla Structures starts. Advanced options are used to determine the appearance and the behavior of Tekla Structures, for example, the language used, behavior of part marks on drawings, and the location of your model folder. Advanced options are set through the .ini files. The different .ini files and what they do, and how they are related to each other are described below.

Different types of .ini files

The [default reading order \(page 226\)](#) of the .ini files is as shown in the image below:



1. `teklastructures.ini`

Initializes the settings needed for Tekla Structures to run.

The `teklastructures.ini` file in the `\bin` folder starts Tekla Structures. We recommend that you do not make any changes to this file.

2. `env_global_default.ini`

Sets the global default settings.

The `env_<your_environment>.ini` file is located in the `\Environments` subfolder and it contains all the environment-specific settings. These files are set by your area office or reseller.

3. `environment.ini`

Sets the environment-specific settings.

4. `role.ini`

Sets the settings defined for a role.

The `role_<role>.ini` file is located in the `\Environments` subfolder and it contains the settings specific for a chosen role. For example, the `role_Engineer.ini` file in the `\Environments\uk` folder contains all the settings for the Engineering role in the UK environment.

5. `user.ini`

Sets the settings specified by the user.

The `user.ini` file contains your personal settings. The advanced options in `user.ini` override those in other `.ini` files. For example, if you have set the same advanced option in an `.ini` file, in a file in the environments subfolder and the `user.ini` file, Tekla Structures uses the value in the `user.ini` file. The `user.ini` is located in the `C:\Users\<user_name>\AppData\Local\Tekla Structures\<version>\UserSettings` folder.

6. `options.ini`

Sets the settings specified for the company/project/model.

If there are several settings for the same advanced option, the later setting in the reading order overrules the previous one. This means that the settings in `user.ini` overrule the settings in `env_global_default.ini`, and the settings in `user.in` can be overruled by the settings in `options.ini`.

The `lang_enu.ini` is the initialization file for the English language settings. The file is located with the other installed languages in the `\Tekla Structures\<version>\nt\bin` folder.

We recommend that you make all your customizations in the `options.ini` file under the model folder, or in the `user.ini` file. This way the customizations are kept when you install the next version of Tekla Structures.

Setting advanced options in .ini files

Tekla Structures contains three kinds of advanced options: user-specific advanced options, system-specific advanced options, and model-specific advanced options.

NOTE Changing an advanced option value in .ini files located outside the model folder does not affect the existing models. You can only update the advanced options in the **Advanced options** dialog box or in the options.ini file located in the model folder, not from an options.ini file located in folders defined for the XS_FIRM or XS_PROJECT advanced option. The .ini files are also read when you open an existing model, but only new advanced options that do not exist in options_model.db or options_drawings.db are inserted, for example, such options that are not yet in the **Advanced Options** dialog box, but have been added in the software.

User-specific advanced options set your personal preferences, for example the appearance of the Tekla Structures window. Tekla Structures saves user-specific advanced option settings in the options_<your_username>.ini file, located in the C:\Users\<user_name>\AppData\Local\Tekla Structures\<version>\UserSettings folder.

The options.ini file contains the settings for **model-specific advanced options**. It is located in the current model folder. To share your settings with other people, copy the options.ini file to the system, project or firm folder.

The **system-specific advanced options** are stored in all other .ini files.

Setting advanced options

There are two methods for setting advanced options:

- The advanced options are grouped in different categories according to their usage in the **Advanced Options** dialog box. To access the dialog box, click **File --> Settings --> Advanced options**. See more in [Advanced options reference](#).
- The .ini files are plain text files that can be edited with a text editor, for example Notepad. The settings will then be saved in the options.ini file under the model folder for the model that you have open. The settings can then easily be copy-pasted into another .ini file. See more in [File storing options and advanced options \(page 234\)](#).

We recommend that you only use one of these methods to set advanced options. The settings in the **Advanced Options** dialog box override those in the .ini files. Some advanced options need a Tekla Structures restart to activate the new setting.

To set an advanced option in the user.ini file:

1. Locate the user.ini file in the C:\Users\<user_name>\AppData\Local\Tekla Structures\<version>\UserSettings folder.

2. Select and right-click the `user.ini` file in Windows Explorer and click **Open with**. You can open the file in any standard text editor.
3. Check that the advanced option is set to the value you want. If it is, you can stop here.
4. To change or add the advanced option, on a new line, type `set`, add a space and the name of the advanced option followed by its value in a single line.

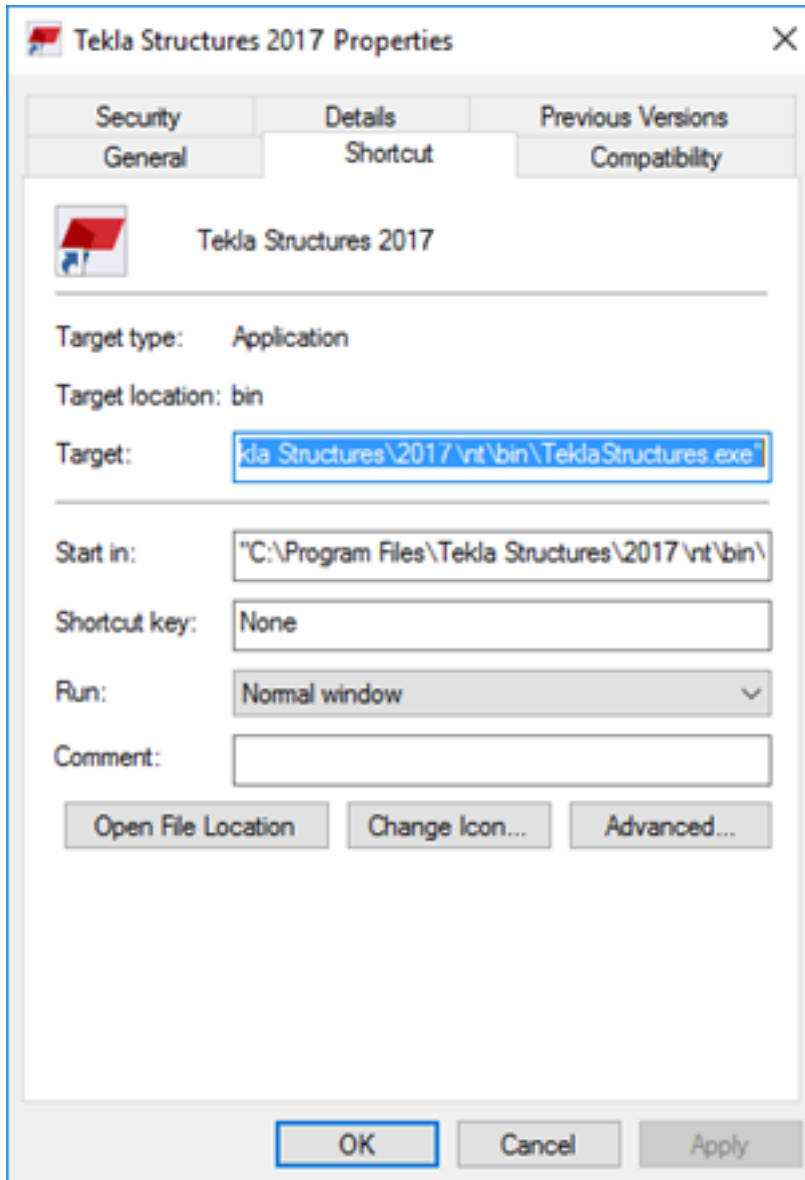
Tekla Structures only reads lines in the initialization file that start with `set`, for example, `set %XS_DIR%=C:\TeklaStructures\2017i`

5. Save the `user.ini` file.

Creating shortcuts

To use the correct `.ini` files for a specific project, the easiest way is to create a shortcut for the project on the desktop. Shortcuts are used to start `teklastructures.exe` with the defined initializations.

1. Make a copy of the default shortcut: In the Windows **Start** menu or **Start screen**, find **Tekla Structures <version>**, then right-click the Tekla Structures <version>.
2. Select **Copy** from the pop-up menu.
3. Paste the shortcut to your desktop.
4. Select the shortcut and right-click.
5. Select **Properties** from the pop-up menu.
6. Modify the **Target** of the shortcut by adding the required project initializations to it.



For example, you can use the following parameters in shortcuts:

- `-i InitializationFile`: Initialization file to be read during startup, for example: `-i \\MyServer\MyProject\Project1.ini`. You can repeat this parameter as many times as you need.
 - `ModelToBeOpened`: Full path to the model to be opened automatically.
- `.ini` files tell where things can be found and in which order, depending on the folder structure that the company has set up. See more in [Create startup shortcuts with customized initializations \(page 21\)](#).

Bypassing the login screen

You can bypass the login screen by using a separate `.ini` file where you set the following three advanced options:

- `XS_DEFAULT_LICENSE` to set the default license for a user role.
- `XS_DEFAULT_ENVIRONMENT` points to the environment-specific `.ini` file, for example `%XSDATADIR%\environments\usimp\env_usimp.ini`
- `XS_DEFAULT_ROLE` points to the role-specific `.ini` file, for example `%XSDATADIR%\environments\usimp\role_Steel_Detailer.ini`

Define the startup shortcut using the parameter `-I` (capital i), for example, `-I %XSDATADIR%\environments\usimp\Bypass.ini`. When you do this, an additional initialization file is read BEFORE the environment `.ini`.

The content of such a file could be, for example:

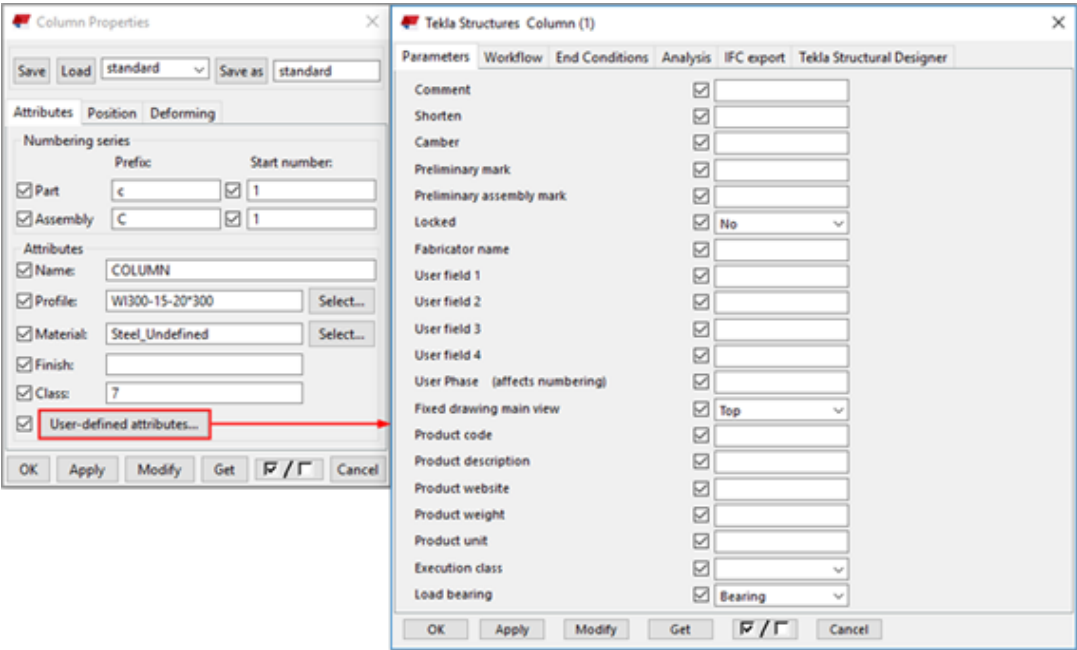
```
set XS_DEFAULT_LICENSE=FULL
  set XS_DEFAULT_ENVIRONMENT=%XSDATADIR%\environments\usimp
\env_US_Imperial.ini
  set XS_DEFAULT_ROLE=%XSDATADIR%\environments\usimp\role_Steel_
Detailer.ini
```

See more in [Create startup shortcuts with customized initializations \(page 21\)](#).

User-defined attributes

User-defined attributes are attributes set to an object in a model or a drawing. These user-defined attributes can be used for many purposes, such as in

filters, drawings, reports, export, import, fabrication, erection, and revision handling.



You can [create your own user-defined attributes \(page 261\)](#) that you need in your company, or for a specific project. The user-defined attributes can be numbers, text, lists, or dates. They can be set to be unique for an object or allowed to be copied; they can also be ignored by numbering or affect numbering.

The user-defined attributes are defined in `objects.inp` files. These files are located in different folders following the Tekla Structures folder setup, and they are merged together during startup. The `objects.inp` file reads the user-defined attributes in order from the folders listed below, starting from the model folder:

Folder defined by advanced option	Advanced option
Model	Current model folder
Project	<code>XS_PROJECT</code> (your defined project folder)
Firm	<code>XS_FIRM</code> (your defined firm folder)
System	<code>XS_SYSTEM</code> (your defined system folder)
inp	<code>XS_INP</code> (your defined inp folder)

The files are merged so that if there are user-defined attributes in any of the files, they are displayed in the user interface. Tekla Structures merges the files so that duplicate attributes are removed. If Tekla Structures encounters the

same attribute name in different `objects.inp` files, the attribute from the first read `objects.inp` file will be used.

If you need to have several `objects.inp` files in the same folder, you can use a suffix in the file name to use all the files. This enables having several `objects_<suffix>.inp` files in the same folder. The file name could be `objects_precast.inp`, for example.

4.2 Environment, company and project settings for administrators

Environment settings

Common settings

All settings and files that are the same in all environments are located in the `\Tekla Structures\<version>\Environments\common` folder. Files and settings that are specific to an environment are located in separate environment folders.

The `env_global_default.ini` file is also located in the `\common` folder. The file determines the standard settings, and it is the first file that is read. Other [initialization files \(page 226\)](#) are read after this file, and if the other files contain the same settings, they will override the previous settings.

Country-specific settings

The country-specific settings are located in the environments folders, and they are localized by your local Trimble office/reseller. The folder structure of the environments can vary, but the same kind of settings exist. For example, the settings that are localized include profile database, material database, reports, selection filters, view filters, components and custom components, macros, user-defined attributes, and drawings settings.

Company settings

Company-level settings are mainly settings that are used throughout the company for all projects. These settings are set using `XS_SYSTEM` and `XS_FIRM`.

For a larger company with subsidiaries, the settings could be used as follows:

- `XS_SYSTEM` may contain multiple paths, and it points to general settings inside the company. These can be company logo, reports, printer settings, drawing settings, templates, for example. These are settings that vary

seldom change, and are stored on a server available for all. For example, if the company logo is updated, it only has to be replaced in one place.

- `XS_FIRM` points to the firm folder set up by the company, or a subsidiary. The folder contains all the company settings used at the particular office. These can be logos, drawing settings, templates, reports, or printer settings, for example.
- `XS_PROJECT` points to the project folder. The folder contains project settings, such as logos for contractors and fabricators, or drawing settings, for example.

For more information on the folder search order, see [Folder search order \(page 307\)](#).

You can also use the Tekla Warehouse company-specific collections online or offline, in your own network. Use Trimble Identity for downloading or installing from the online collections. See also [Trimble Identity for Tekla Online services](#).

The offline collection access is managed with folder rights in your network, and on the collection level in the `collections.json` file on each user's computer.

```
"collections"  
"\\\\server-A\\company\\Tekla Structures collection"
```

The `collections.json` file can be shared to selected persons by copying it to the `C:\Users\Public\Documents\Tekla\Tekla Warehouse\` folder.

Model templates

You can save the desired settings in a model and use the model as a template when you create new models. This can be very useful if your company has different kinds of projects, such as, parking garages, office buildings, bridges, and industrial.

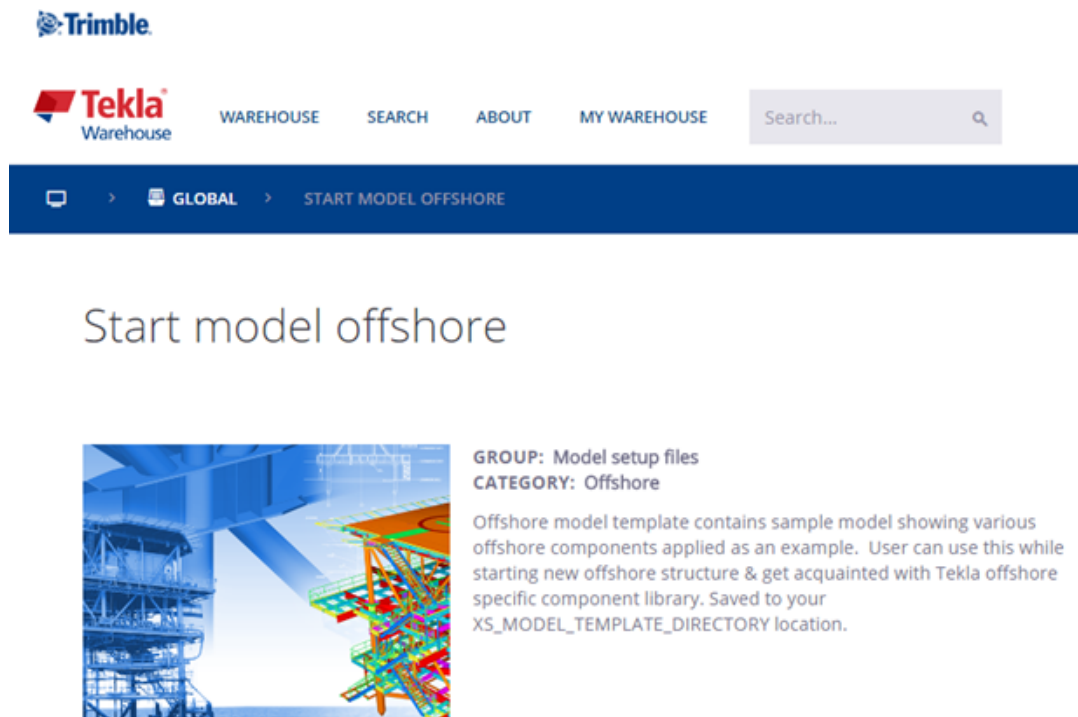
When you create a model template, always start by creating a new empty model. This is because old models that have been used in live projects cannot be completely cleaned. They may contain excess information that increases the size of the model even if you delete all objects and drawings from the model.

To create a model template:

1. Create a new model and give it a unique name.
2. Add in the model the desired profiles, custom components, and other necessary items.
3. On the **File** menu, click **Save as --> Save as model template**.
4. Move the whole model folder to the location pointed by the `XS_MODEL_TEMPLATE_DIRECTORY` advanced option . By default, the advanced option points to the folder `\TeklaStructures\<version>\Environments\default\model_templates\`.

5. In the new model template folder, open the `TeklaStructuresModel.xml` file using any standard text editor.
6. Set the `<IsTemplate>` element to `TRUE`. The default value is `FALSE`.
7. Save the file.

You can also search for model templates in [Tekla Warehouse](#). The image below shows an example of a model template in Tekla Warehouse.



The **Insert into model** button installs the model template directly in the folder pointed by `XS_MODEL_TEMPLATE_DIRECTORY`. You can immediately use the template when creating a new model.

NOTE We strongly recommend that you update your model templates in the Tekla Structures version upgrade. See Administrator's release notes: Model templates in version update for more detailed instructions.

Customizing reports and drawings

If your company already has graphical templates in the DXF, DWG, or DGN format, you can convert these templates to Tekla Structures templates. For detailed instructions on how to do this, see the information on AutoCAD and Microstation files in the Template Editor Help.

For information on how to create your own templates and reports, see the Template Editor Help, and Reports and [Templates \(page 311\)](#).

Cloning templates for drawings

You should consider cloning drawings when:

- There are several similar parts, assemblies, or cast units in the model.
- You need to produce single-part, assembly, or cast-unit drawings of similar parts, assemblies, or cast units.
- The drawings need a lot of manual editing.

For example, you can create a drawing for one truss, edit the drawing, and then clone it for similar trusses. Then you only need to modify the cloned drawings where the trusses differ.

The cloned drawing may contain more parts than the original drawing. Part properties, marks, associative notes and related text objects are cloned from a similar part in the original drawing.


Clone templates in Master Drawing Catalog

You can clone drawings by using the **Master Drawing Catalog** templates. A cloning template in the **Master Drawing Catalog** can also be used in other models. They can be used in projects that have the same kind of drawings.

To create cloning templates:

1. Select a drawing in the **Drawing List**.
2. Right-click and select **Add to Master Drawing Catalog**, and then fill in the required properties.

The cloning template can be found under **Cloning templates** in the **Master Drawing Catalog**. To use cloning templates in other models, open the **Master**


Drawing Catalog in the model, click the  button on the toolbar, and add the model where the templates are saved.

For more information on the **Master Drawing Catalog** and cloning templates, see Create drawings in Master Drawing Catalog.

Project settings

Create your own component folder

Usually, only a few different connections and components are used in a project. To ensure that everyone in the project uses the same components and finds the components faster, we recommend that you create a component folder of your own.

1. Click the **Applications & components** button  in the side pane to open the **Applications & components** catalog.
2. Create a new group for the project: Right-click in the catalog and select **New group**.
3. Add components to the group: Select the components in the catalog, right-click and select **Add to group**. Then select the group to which the

components are added. You can also drag the selected components to another group.

4. Hide the groups that you do not need: Select the group, right-click and select **Hide/Unhide**.

TIP In the **Applications & components** catalog, use the commands in

Access advanced features  > **Catalog management** to modify catalog definitions. For more information, see [Applications & components catalog for administrators](#) and `XS_COMPONENT_CATALOG_ALLOW_SYSTEM_EDIT`.

For more information on the **Applications & components** catalog, see [How to use the Applications & components catalog](#).

Define project properties

Project information is needed many times during a project. Define the project information at the beginning of a project to make reports and drawings display the correct information automatically. You can also update the project properties during the project.

1. On the **File** menu, click **Project properties**.
2. Select **Edit**.
3. Define the project properties and click **Apply** to save your changes.

Create and modify templates and reports

You can modify existing reports and templates, or create your own [templates \(page 311\)](#) by using Template Editor. To open Template Editor, click **File --> Editors --> Template editor**, or double-click an existing table in an open drawing to open the tool. For more information, see [Template Editor User's Guide](#).

Note that if your templates are located in a protected folder, the templates are read-only, and you cannot save a modified template in a protected folder. In this case, run Tekla Structures as an administrator.

Set up printers

Tekla Structures uses Windows drivers to write the print data directly to the Windows print device interface. You can print drawings as PDF files, save them as plot files (`.plt`) for printing with printer/plotter, or print them on a selected printer. To print to several paper sizes, you need to modify the `drawingsizes.dat` file, see more in Configuration files used in printing. You can also change the line width of the printed drawings, see more in Print to a .pdf file, plot file (.plt) or printer and Line thickness in drawings.

You can affect the way Tekla Structures automatically names the `.pdf` files and plot files by using certain drawing-type-specific advanced options, see more in Customize print output file names.

4.3 Distribute custom ribbons using a firm or environment folder

You can distribute customized ribbon files to other users in the company by placing the ribbon files in a firm or environment folder (not in the project folder). For example, the administrator can create company ribbons and save them in the firm folder. These ribbons will be displayed in the Tekla Structures user interface for all users who use the same firm folder.

Add ribbons to the firm or environment folder

1. In the customization tool, create the modeling and drawing ribbons that you want to share.

The ribbons are saved in the `.. \Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\Ribbons` folder.

2. Copy the entire `\Ribbons` folder either to your company's firm folder or to the `\system` folder, which is located under the environment folder: `.. \ProgramData\Tekla Structures\<version>\Environments\<environment>\system`.
3. If the ribbon contains user-defined commands, create a subfolder named `\Commands` on the same level as the `\Ribbons` folder, and copy the `UserDefined.xml` file from the `.. \Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\Commands` folder to the `\Commands` folder you just created.
4. Restart Tekla Structures.

Loading order of custom ribbons

Tekla Structures loads the ribbons in the following order:

1. Tekla Structures default ribbon
2. Company ribbons in the environment folders
3. Company ribbons in the firm folder
4. User-defined ribbons under `%localappdata%`

Note that the ribbons which are loaded later will override previously loaded ribbons that have the same configuration + editing mode combination. For example, a ribbon defined in the firm folder will take precedence over the ribbons in the environment folders.

If you have a customized ribbon in the `.. \Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\Ribbons` folder, it will take precedence over company ribbons. To override this, open the ribbon

customization tool and click **Reset to defaults**. The ribbon in the environment or firm folder will now be used. Alternatively, you can remove or rename your own customized ribbons.

Naming convention for ribbon files

The customization tool saves the custom ribbons as .xml files. The naming convention for these files is:

```
<Tekla-Structures-configuration_identifier>--<Tekla-Structures-editing-mode>.xml
```

The name consists of an internal configuration name, a separator of two dash characters (--), an internal editing mode name, and the file name extension .xml. For example, the **Full** license modeling ribbon is called `albl_up_Full--main_menu.xml`.

Configuration identifier	Name
albl_up_Construction_Modeling	Construction Modeling
albl_up_Developer	Developer
albl_up_Drafter	Drafter
albl_up_Educational	Educational
albl_up_Engineering	Engineering
albl_up_Full	Full
albl_up_PC_Detailing	Precast Concrete Detailing
albl_up_Rebar_Detailing	Rebar Detailing
albl_up_Steel_Detailing	Steel Detailing
albl_up_Tekla_Structures_Primary	Primary
albl_up_Viewer	Project Viewer

Editing mode	Purpose
main_menu	Modeling ribbon
edit_draw_menu	Drawing ribbon
plan_main_menu	Importing ribbon

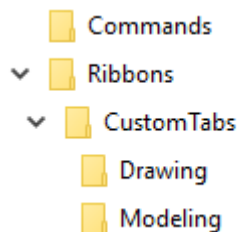
4.4 Distribute custom tabs using a firm or environment folder

As an alternative to customized ribbon files, which override the existing ribbon, you can import external custom tabs to the ribbon. The custom tabs are automatically appended to the end of the ribbon for all users who use the

same firm or environment folder. This means that an administrator can distribute customizations to all users in the company while still allowing individual users to customize their ribbons as well.

Note that these custom tabs do not appear in the customization tool, so the users are not able to edit them. If the administrator has updated the contents of a custom tab, the users will receive an update when they restart Tekla Structures. Tabs are not configuration specific, so they are imported regardless of the user's Tekla Structures license. If the tab contains commands that are not available in the user's configuration, they will appear dimmed on the ribbon.

1. Create the following folder structure in your company's firm folder or in the `\system` folder, which is located under your environment folder: `.. \ProgramData\Tekla Structures\<version>\Environments \<environment>\system.`



2. In the ribbon customization tool, create a custom tab and add some commands to it.
3. Save the ribbon.
4. Go to the `..\Users\<user>\AppData\Local\Trimble \TeklaStructures\<version>\UI\Ribbons` folder.
5. In a text editor, open the ribbon file which contains the tab you wish to share with other users.
6. Remove all the other content from the ribbon file except the first row and the description of the tab you wish to share.

For example:

```
<Tab Header="My Tab" IsCollapsed="false" IsUserDefined="true">
  <SimpleButton X="0" Y="0" Width="3" Height="4"
    Command="Common.Interrupt" Text="command:ShortText"
    Icon="command:BigIcon" ShowText="true" ShowIcon="true" />
</Tab>
```

7. Save the file with a new name in the `..\CustomTabs\Modeling` or `..\CustomTabs\Drawing` folder.

Tab files have the file name extension `*.xml`. We recommend that you use the same name as for the tab. For example, `MyTab.xml`. The file name is not case sensitive.

The tab will be added to either the modeling or drawing mode ribbons, depending on the folder it is located in. Note that there can be several

custom tab files in the same folder. They are added to the ribbon one after the other. Note that if the same tab file exists in both the environment and firm folders, the firm version overrides the environment version.

NOTE To avoid file name conflicts, we recommend that administrators prefix all custom tab files with the company name, and that extension developers prefix all custom tab files with the name of the extension (for example, `MyExtension_TabName.xml`).

8. If the tab contains user-defined commands, copy the `UserDefined.xml` file from the `..\Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\Commands` folder to the `\Commands` folder created in step 1.

9. Restart Tekla Structures.

The custom tab now appears at the end of the ribbon.

4.5 Distribute customized property pane layouts using a project, firm, or environment folder

Company administrators can distribute the customized property pane layouts to other users in the company by placing the property pane layout file `PropertyTemplates.xml` in a folder called `PropertyRepository\Templates` in a project, firm, or environment folder. For example, company administrators can create company property pane layouts and save them in the firm folder. These property panes are available in the Tekla Structures user interface for all users who use the same firm folder.

NOTE If you use a firm folder to distribute the `PropertyTemplates.xml` file, you need to set the firm folder path in an `.ini` file. If you set the firm folder path in the advanced option `XS_FIRM`, the `PropertyTemplates.xml` file does not work correctly.

Add a property pane layout file to a project, firm, or environment folder

1. In the customization tool, create the property pane layouts that you want to share.

The property pane layouts are saved in the `PropertyTemplates.xml` file, in the `..\Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\PropertyTemplates` folder.

2. Create a folder called `PropertyRepository\Templates` either in your company's project folder, firm folder, or in the `\system` folder, which is located under the environment folder: `..\ProgramData\Tekla Structures\<version>\Environments\<environment>\system`.
3. Copy the `PropertyTemplates.xml` file to the `PropertyRepository\Templates` folder.

For example: `..\ProgramData\Tekla Structures\<version>\Environments\<environment>\system\PropertyRepository\Templates\PropertyTemplates.xml`.
4. Restart Tekla Structures.

Search order of the customized property pane layout files

The `PropertyTemplates.xml` file contains all the property pane layouts for different object types. Note that the property pane layouts for different object types are treated separately. For example, Tekla Structures can read the property pane layout for steel beam from a different location than the property pane layout for steel column.

If different object types are defined in different folder locations, the definitions are combined. If the same object type is defined differently in different folder locations, the definition that is higher in the search order is used.

The property pane layout in the `..\Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>\UI\PropertyTemplates\` folder has the highest priority, and after that Tekla Structures uses the default search order.

4.6 Customize the material catalog

The material catalog contains information on material types and grades. In the material catalog, materials are displayed in a hierarchical tree grouped according to their types. Each material type has material grades listed under them.

The following material types are available in Tekla Structures:

- Steel
- Concrete
- Reinforcing bar
- Timber
- Miscellaneous

By default, the material catalog contains standard, environment-specific materials. You can add, modify, and delete material grades.

Tekla Structures stores the material information in the `matdb.bin` file.

See also

[Important buttons in the material catalog \(page 139\)](#)

[Add a material grade \(page 140\)](#)

[Copy a material grade \(page 140\)](#)

[Modify a material grade \(page 141\)](#)

[Delete a material grade \(page 142\)](#)


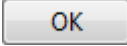
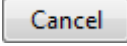
[Add user attributes to material grades \(page 142\)](#)

[Create user-defined material definitions \(page 143\)](#)

[Import and export material grades \(page 144\)](#)

Important buttons in the material catalog

When you work with the material grades, note the usage of the following buttons in the **Modify Material Catalog** dialog box:

Button	Description
	Saves the changes of a single edited material grade to the computer's memory until you click OK .
	Saves the changes in the model folder. Tekla Structures saves the modified catalog on the hard disk when you click OK to close the dialog box and then click OK in the Save confirmation dialog box.
	Closes the Modify Material Catalog dialog box without saving the changes. Note that all changes made to the catalog will be lost even if you have clicked Update , because the changes have not been saved on the hard disk. The changes made to the catalog are visible during one session, because the catalog is using the computer's memory. When you start Tekla Structures the next time, the previous data is restored from the hard disk.

Tekla Structures stores the material information in the `matdb.bin` file. When you first open a model, Tekla Structures reads the data from the hard disk and stores it in the computer's memory.

When you select a material, Tekla Structures reads the data from the computer's memory and displays it in the **Modify Material Catalog** dialog box. This is faster than accessing the data from the hard disk.

See also

[Customize the material catalog \(page 138\)](#)

Add a material grade

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Select a material type, for example, steel.
3. Right-click and select **Add Grade**.
A new material grade is added under to the material type you selected.
4. Change the material grade name by clicking the grade and entering a new name for it.
5. Enter the material grade properties.
6. Click **OK** to save the material grade and close the **Modify Material Catalog** dialog box.
7. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Copy a material grade \(page 140\)](#)

[Modify a material grade \(page 141\)](#)

[Delete a material grade \(page 142\)](#)

[Import and export material grades \(page 144\)](#)

Copy a material grade

You can add new material grades by modifying a copy of an existing, similar material grade.

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Select a material grade that is similar to the one you wish to create.
3. Right-click and select **Copy Grade**.
A copy of the material grade with the name **COPY** is added to the material tree.
4. Change the material grade name by clicking the grade and entering a new name for it.
5. Modify the material grade properties.

6. Click **OK** to save the material grade and close the **Modify Material Catalog** dialog box.
7. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Add a material grade \(page 140\)](#)

[Modify a material grade \(page 141\)](#)

[Delete a material grade \(page 142\)](#)

Modify a material grade

You can modify existing material grades using the material catalog.

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Select a material grade in the tree and modify its properties.
 - Use the **General** tab for entering three alternative names for the material. The names are usually the material names used in different countries or standards. The tab also contains the profile and plate density values.
 - Use the **Analysis** tab for entering information on the properties used in structural analysis.
 - Use the **Design** tab for entering information on the design-specific properties, such as strengths and partial safety factors.
 - Use the **User attributes** tab for creating your own attributes for material grades.

For example, you can define a paint layer thickness, or the maximum grain size of concrete using a user-defined attribute.

3. When you have finished modifying the material grade, click **Update**.
4. Click **OK** to close the **Modify Material Catalog** dialog box.

Tekla Structures asks if you want to save the changes to the model folder.
5. Click **OK** in the **Save confirmation** dialog box to save the changes.

The modified material catalog is saved in the current model folder and is available only for that model. To make the modified catalog available for all the other models, use export and import.

See also

[Add a material grade \(page 140\)](#)

[Copy a material grade \(page 140\)](#)

[Delete a material grade \(page 142\)](#)

Delete a material grade

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Select the material grade that you want to delete.
3. Right-click and select **Delete Grade**.
4. Click **OK** to close the **Modify Material Catalog** dialog box.
5. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Add a material grade \(page 140\)](#)

[Copy a material grade \(page 140\)](#)

[Modify a material grade \(page 141\)](#)

Add user attributes to material grades

You can add user attributes and their values to the material grades. The user attributes can then be used, for example, in filtering.

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. On the **User attributes** tab, click **Definitions** to open the **Modify Material Properties** dialog box.
3. Click **Add** to add a new row.
4. To define a user attribute, click each item on a row.
 - a. In the **Category** list, select a material category to which the user attribute is applied.
 - b. In the **Design code** list, select a design code to which the attribute is added.
 - c. In the **Material type** list, select a material type for the attribute.
 - d. In the **Quantity type** list, select the type of information that the user attribute contains, for example, weight, area, ratio, or string.
 - e. In the **Order** column, define the order in which the user attributes are shown in the dialog box. Smaller values are shown first.
 - f. In the **Property name** column, define a name for the property.

The name is saved in the catalog and can be used in reports and templates. When **Property name** is used in a template,

`MATERIAL.PROPERTY_NAME` indicates where the property name appears.

- g. In the **Label** column, define a label for the attribute.
5. Click **Update**.
6. Click **OK** to close the **Modify Material Properties** dialog box.

See also

[Modify a material grade \(page 141\)](#)

Create user-defined material definitions

You can replace the existing material definitions with your own definitions and use them, for example, in drawing part marks. Material definitions can contain text, numbers and symbols.

1. Save the symbol file `user_material_symbols.sym` in the symbol folder (usually the folder `..\ProgramData\Tekla Structures\<version>\environments\common\symbols\`).
2. Create a text file that contains your material definitions.

Create the file using a text editor, for example Microsoft Notepad.

Each row in the file defines a material. Use the following syntax:

`material_name symbol_file_name@n`, where

- `material_name` is the name of the material used in the material catalog
- `symbol_file_name` is the symbol file name to be used
- `n` is the number of the symbol.

For example:

```
S235JRG1 user_material_symbols@1 B
S235JRG2 user_material_symbols@2 C
S235JR   user_material_symbols@0 A
S275JR   user_material_symbols@3 D
S355JR   user_material_symbols@4 E
```

WARNING The order of material names in the definition file is relevant to the conversion. Materials with more specific names need to be listed before the ones with similar, but simpler names, for example, S235JRG1 must be listed before S235JR. Otherwise they both get the same symbol.

3. Save the file for example with the name
`user_material_definitions.txt`.

All the named materials in the material catalog will be replaced with the ones defined in this file.

4. Set the name of the file as a value for the advanced option
`XS_MATERIAL_SYMBOL_REPRESENTATION_FILE` in **File menu --> Settings --> Advanced options --> Drawing Properties** as follows:

```
set
XS_MATERIAL_SYMBOL_REPRESENTATION_FILE=user_material_definitions.txt
```

You can also enter a full path to the material definition file. Without the path Tekla Structures searches for the file in the model, firm, project, and system folders.

See also

[Customize the material catalog \(page 138\)](#)

Import and export material grades

Use importing and exporting for merging material catalogs. Material catalogs are imported and exported as `.lis` files.

Importing and exporting is useful when you:

- upgrade to a newer version of Tekla Structures and want to use a customized material catalog from a previous version
- want to combine material catalogs that are stored in different locations
- want to share material catalog information with other users
- want to combine material catalogs across different environments.

TIP You can also download or share material grades using Tekla Warehouse.

See also

[Import a material catalog \(page 144\)](#)

[Export an entire material catalog \(page 145\)](#)

[Export a part of the material catalog \(page 146\)](#)

[Units used in import and export \(page 159\)](#)

Import a material catalog

Material catalogs are imported to Tekla Structures models as `.lis` files. You can move an exported `.lis` file to any model folder and import it to an existing material catalog.

1. Open the model to which you want to import a material catalog.
2. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
3. Click **Import**.
4. Browse for the folder that contains the import file, and select the file.
5. Click **OK**.

If a material with a same name as the material being imported already exists, the **Import confirmation** dialog box appears and you have three options:

- **Replace:** The existing material is replaced with the imported material.
- **Merge:** Material properties that are different in the import file are added to the existing material. All the other properties remain unchanged.

Use this option to import only certain elements of the material catalog, such as user attributes.

- **Leave:** The existing material is not replaced and the material definitions in the import file are ignored.

If you select the **Apply for all** check box, Tekla Structures uses the same option (**Replace**, **Merge**, or **Leave**) for all the existing materials that have the same name as the one being imported.

If a user attribute with a different definition already exists, you are prompted to **Replace** or **Leave** the existing attribute.

6. Click **OK** to close the **Modify Material Catalog** dialog box.
7. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Export an entire material catalog \(page 145\)](#)

[Export a part of the material catalog \(page 146\)](#)

[Units used in import and export \(page 159\)](#)

Export an entire material catalog

Exporting and importing are used to merge material catalogs. Material catalogs are exported from Tekla Structures models as `.lis` files. Note that the **Export** command exports the entire catalog.

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Click **Export**.
3. Browse for the folder where you want to save the exported file.
By default, the file is saved to the current model folder.
4. Enter a name for the file and click **OK**.
5. Click **OK** to close the **Modify Material Catalog** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Import a material catalog \(page 144\)](#)

[Units used in import and export \(page 159\)](#)

Export a part of the material catalog

If you do not want to export the whole material catalog, you can export a branch of the material tree, meaning all the material grades grouped under one material type, or a single material grade. Material catalogs are exported from Tekla Structures models as `.lis` files.

1. On the **File** menu, click **Catalogs** --> **Material catalog** to open the **Modify Material Catalog** dialog box.
2. Select material grades to be exported.
 - To export a branch of the material tree, right-click the branch and select **Export Grades**.
 - To export a single material grade, right-click the material grade and select **Export Grade**.
3. Browse for the folder where you want to save the export files.
By default, the file is saved to the current model folder.
4. Enter a name for the file and click **OK**.
5. Click **OK** to close the **Modify Material Catalog** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Export an entire material catalog \(page 145\)](#)

[Import a material catalog \(page 144\)](#)

[Units used in import and export \(page 159\)](#)

4.7 Customize the profile catalog

The profile catalog contains information on profiles, their rules and types, and the analysis and design properties of the profiles. Profiles are displayed in a hierarchical tree grouped according to rules.

By default, the profile catalog contains standard, environment-specific profiles and generic parametric profiles. You can add, modify, import, export, and delete profiles.

You can define your own user-defined profiles, which can be either fixed or parametric. Use the profile catalog to create new fixed profiles, either from scratch or by copying an existing one. Use the sketch editor or .clb files to create new parametric profiles.

Tekla Structures stores the profile catalog information in the `profdb.bin` file.

See also

[Important buttons in the profile catalog \(page 147\)](#)

[Group profiles together \(page 148\)](#)

[Add user attributes to profiles \(page 150\)](#)

[Associate profile types with a certain material \(page 153\)](#)

[Delete a profile from the profile catalog \(page 154\)](#)

[Import and export profiles \(page 155\)](#)

[Create your own profiles \(page 162\)](#)


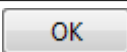
[Define standardized values for parametric profiles \(page 199\)](#)

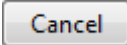
[Create an image of a profile \(page 199\)](#)

[Customize the shape catalog \(page 200\)](#)

Important buttons in the profile catalog

When you work with the profiles, note the usage of the following buttons in the **Modify Profile Catalog** dialog box:

Button	Description
	Saves the changes of a single edited profile to the computer's memory until you click OK .
	Saves the changes in the model folder. Tekla Structures saves the modified catalog on the hard disk when you click OK to close the dialog box and then click OK in the Save confirmation dialog box.

Button	Description
	<p>Closes the Modify Profile Catalog dialog box without saving the changes.</p> <p>Note that all changes made to the catalog will be lost even if you have clicked Update, because the changes have not been saved on the hard disk. The changes made to the catalog are visible during one session, because the catalog is using the computer's memory. When you start Tekla Structures the next time, the previous data is restored from the hard disk.</p>


Tekla Structures stores the information of fixed profiles in the `profdb.bin` file. When you first open a model, Tekla Structures reads the data from the hard disk and stores it in the computer's memory.

When you select a profile, Tekla Structures reads the data from the computer's memory and displays it in the **Modify Profile Catalog** dialog box. This is faster than accessing the data from the hard disk.

See also

[Customize the profile catalog \(page 146\)](#)

Group profiles together

In the profile catalog, the profiles are displayed in a hierarchical tree and they are grouped according to rules , such as the profile type (for example, **I profiles**) and the profile subtype (for example, **HEA**). To change how the profiles are grouped in the profile tree, you need to modify the rules.

The order in which you create the rules does not matter, only the location of the rules in the profile tree.

Tekla Structures reads the rules from top to bottom in the profile tree. Profiles are in the highest group where they meet the criteria defined in the rule. For example, a rule that collects **All profiles** overrides all rules that are below it in the profile tree.

See also

[Add a rule to the profile catalog \(page 148\)](#)

[Modify a rule in the profile catalog \(page 149\)](#)

Add a rule to the profile catalog

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.

2. Right-click any existing rule and select **Add Rule**.
The **Profile manager rules** dialog box appears.
3. Define the rule properties.
 - a. Enter a rule name in the **Rule name** box.
 - b. Select the **Profile type** to which the rule is applied.
 - c. Enter the **Name filter string** that defines the new rule.
By default, the wildcard symbol (*) is entered, meaning “all entries”.
For example, to group all catalog entries with names beginning with A, enter A* in the **Name filter string** box, or to group all catalog entries with names containing 100, enter *100*. Tekla Structures groups the catalog entries that meet your criteria under the new rule.
4. Click **OK** to close the **Profile manager rules** dialog box.
5. Click **OK** to close the **Modify Profile Catalog** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

TIP You can add a next level rule that creates a subgroup under an existing rule. Use the **Add Next Level Rule** command to add the next level rule.

See also

[Modify a rule in the profile catalog \(page 149\)](#)

Modify a rule in the profile catalog

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Right-click any existing rule and select **Edit Rule**.
The **Profile manager rules** dialog box appears.
3. Modify the rule properties.
4. Click **OK** to close the **Profile manager rules** dialog box.
5. Click **OK** to close the **Modify Profile Catalog** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

Profiles in the profile tree are listed in an alphabetical order, and rules are listed in the order you specify. To change the order in which the rules appear, use the **Move up** and **Move down** commands.

TIP If you want to delete a rule, right-click an existing rule and select **Delete Rule**.

See also

[Add a rule to the profile catalog \(page 148\)](#)

Add user attributes to profiles

You can add your own attributes to profiles. For example, you can specify paint layer thickness, define the maximum grain size of concrete, sort out different profile types by material, or create profile aliases for converting imperial profiles to metric and vice versa.

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. On the **User attributes** tab, click **Definitions**.
The **Modify Profile Properties** dialog box appears.
3. Click **Add** to add a new row.
4. To define a user attribute, click each item on a row.
 - a. In the **Profile type** list, select a profile type to which the user attribute is applied.
 - b. In the **Quantity type** list, select the type of information that the user attribute contains, for example, weight, area, ratio, or string.
 - c. In the **Order** list, define the order in which the user attributes are shown in the dialog box. Larger values are shown first.
 - d. In the **Property name** list, define a name for the property.
The name is saved in the catalog and can be used in reports and templates. When **Property name** is used in a template, `PROFILE.PROPERTY_NAME` indicates where the property name appears. For example, `PAINT_LAYER_THICKNESS`.
 - e. In the **Symbol** column, define an abbreviation that can be used for the property, such as `Ix` or `ct`.
 - f. In the **Label** column, define a label for the attribute.
5. Click **Update**.
6. Click **OK** to close the **Modify Profile Properties** dialog box.

See also

[Example: Add a user attribute to a profile and use it in a rule \(page 150\)](#)

Example: Add a user attribute to a profile and use it in a rule

You can add your own attributes and their values to profiles. The user attributes can then be used, for example, in profile filtering.

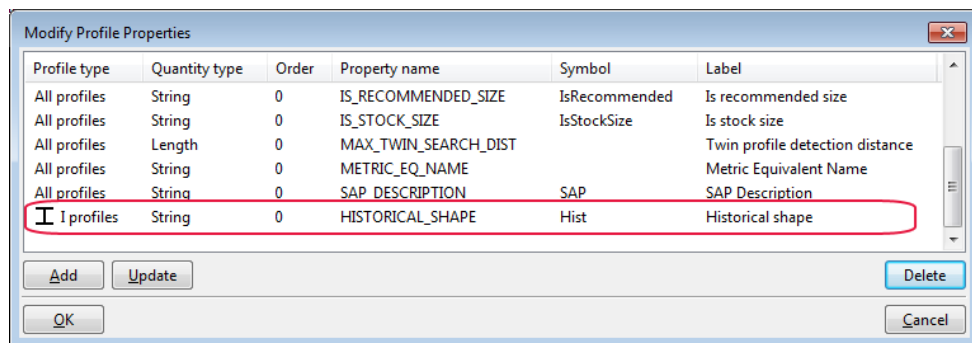
In this example, you will add a user attribute for I profiles' rule.

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.

2. On the **User attributes** tab, click **Definitions**.

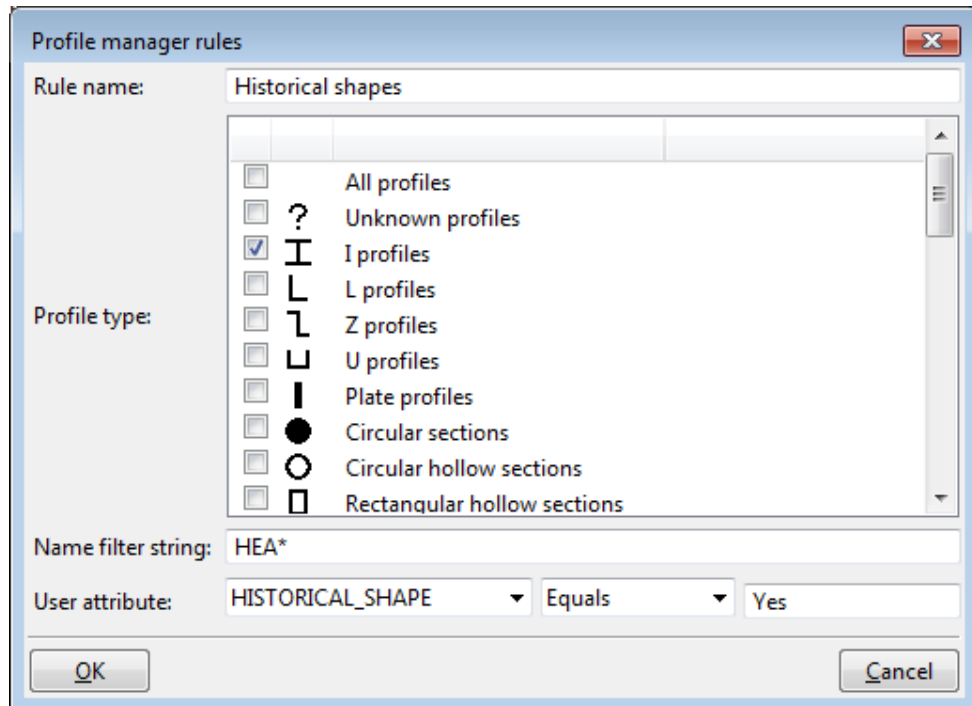
The **Modify Profile Properties** dialog box appears.

3. Click **Add** to add a new row.
4. Select the row that was created and modify the properties as follows:
 - Set **Profile type** to **I profiles**.
 - Set **Quantity type** to **String**.
 - Set **Property name** to `HISTORICAL_PROFILE`.
 - Set **Symbol** to `Hist`.
 - Set **Label** to `Historical profile`.



5. Click **Update** and **OK**.
6. In the profile tree, select **I profiles** and then **HEA**.
7. Right-click and select **Add Next Level Rule**.
8. In the **Profile manager rules** dialog box, set the rule properties as follows:
 - Set **Rule name** to `Historical profiles`.
 - In **Profile type**, clear the **All profiles** check box and select the **I profiles** check box.
 - Enter `HEA*` in the **Name filter string** box.

- Set **User attribute** to **HISTORICAL_PROFILE** and **Equals**, and enter **Yes** in the box next to the two other boxes.



- Click **OK**.
- Historical profiles** appears in the profile tree.
- Select the required historical profile, for example **HEA120**, in the profile tree.
- Go to the **User attributes** tab and set **Value** of **Historical profile** to **Yes**.

General Analysis User attributes			
Property	Symbol	Value	Unit
SAP Description	SAP		
Metric Equivalent Name			
Twin profile detection distance		0.00	mm
Is stock size	IsStockSize		
Is recommended size	IsRecommended		
Historical shape	Hist	Yes	
List of factories	FactoryList		
Design order		0	

- Click **Update**.
- Repeat the steps 10 and 11 for any other required profiles.

14. Click **OK** to close the **Modify Profile Catalog** dialog box.
15. Click **OK** in the **Save confirmation** dialog box to save the changes.

Next time you open the profile catalog, the profiles appear under **Historical profiles** in the profile tree.

See also

[Add user attributes to profiles \(page 150\)](#)

[Add a rule to the profile catalog \(page 148\)](#)

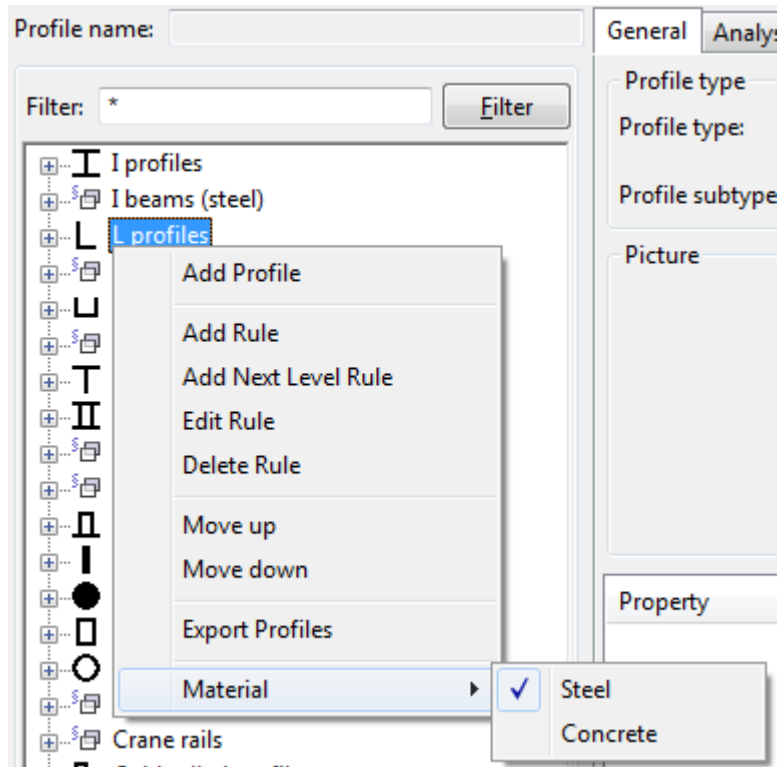
Associate profile types with a certain material

You can define which profiles are available for steel parts, concrete parts, or both. This affects which profile types are shown in the **Select Profile** dialog box when you change the material of a part.

To define the material of a profile type:

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select a profile type, for example, **L profiles**.
3. To associate the profiles with steel, right-click and select **Material --> Steel**.

A check mark next to **Steel** indicates that the profiles are available for steel parts.



4. To make the selected profiles available also for concrete parts, right-click and select **Material** --> **Concrete**.
- If needed, you can remove the check mark by clicking the material again.
5. Click **OK** to close the **Modify Profile Catalog** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

Delete a profile from the profile catalog

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select the profile that you want to delete.
3. Right-click and select **Delete Profile**.
4. Click **OK** to close the **Modify Profile Catalog** dialog box.
5. Click **OK** in the **Save confirmation** dialog box to save the changes.

Tekla Structures will continue showing parts in model views using the deleted profiles until you modify the parts or reopen the model. After that, the parts

having profiles that are not available in the profile catalog, are shown as sticks without a profile.

See also

[Customize the profile catalog \(page 146\)](#)

Import and export profiles

Use importing and exporting for merging profiles across profile catalogs. Profile catalogs are imported and exported as `.lis` files, sketched profiles as `.uel` files, and user-defined parametric profiles as `.clb` files.

When you export an entire profile catalog, Tekla Structures creates three separate files: `profiles.clb`, `profiles.lis` and `rules.lis`. The `.clb` file contains parametric profile definitions, if they are used in the profiles in the catalog, otherwise it is empty. The `profiles.lis` file includes the actual profile definitions and the `rules.lis` file the branch rules. When you export a branch of a profile catalog, the branch name is attached as prefix to the file names.

Importing and exporting is useful when you:

- upgrade to a newer version of Tekla Structures and want to use a customized profile catalog from a previous version
- want to combine profile catalogs that are stored in different locations
- want to share profile catalog information with other users
- want to combine profile catalogs across different environments.

Limitations

- You cannot import or export hard-coded profiles such as `PROFILE_ZZ`, `PROFILE_CC`, and `PROFILE_CW`.
- You cannot import profiles that do not have a defined cross section.
- If you have used a sketched profile or a user-defined parametric profile as the cross section for a fixed profile, you also need to import the sketched profile or the user-defined parametric profile to the new model.

TIP You can also download or share profiles using Tekla Warehouse.

See also

[Export an entire profile catalog \(page 157\)](#)

[Export a part of the profile catalog \(page 157\)](#)

[Import profile catalog items \(page 156\)](#)

[Import and export sketched profiles \(page 161\)](#)

Import profile catalog items

Tekla Structures has five types of profile catalog items: fixed profiles, hard-coded parametric profiles, sketched profiles, user-defined parametric profiles, and rule sets. Profiles and rule sets are imported to Tekla Structures models as `.lis` files, sketched profiles as `.uel` files, and user-defined parametric profiles as `.clb` files.

If you are importing an entire profile catalog or a branch, we recommend that you save the related files in a separate folder. This makes the import process faster.

1. Open the model to which you want to import profile catalog items.
2. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
3. Click **Import** to import a single file, or **Import Directory** to import the contents of a file folder.
4. Select the import file or the import folder.
5. Click **OK**.

If a profile item with the same name as the profile item being imported already exists, the **Review import items** dialog box appears, and you have four options:

- **Leave:** The existing profile item is not replaced and the profile definitions in the import file are ignored.
- **Merge:** Profile properties that are different in the import file are added to the existing profile. All the other properties remain unchanged.
Use this option to import only certain elements of the profile catalog, such as user attributes.
- **Replace:** The existing profile item is replaced with the imported profile item.
- **Continue:** The dialog box closes and the actions you selected take place. If an import item has **Unknown** as the action, it is not imported.

You can select more than one profile item at a time by using the **Shift** and **Ctrl** keys.

NOTE Each cross section definition has a unique name and ID number. If, during an import, a cross section with the same name but different properties is found in the existing profile catalog, the cross section being imported is renamed by adding an incremental number at the end of the existing name.

6. Click **OK** to close the **Modify Profile Catalog** dialog box.
7. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Import and export profiles \(page 155\)](#)

[Export an entire profile catalog \(page 157\)](#)

[Export a part of the profile catalog \(page 157\)](#)

[Import sketched profiles \(page 161\)](#)

[Units used in import and export \(page 159\)](#)

Export an entire profile catalog

Profile catalogs are exported from Tekla Structures models as `.lis`, `.uel`, and `.clb` files.

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Click **Export**.
3. Browse for the folder where you want to save the export files.
By default, the files are saved to the current model folder. For faster profile catalog import, we recommend that you create a separate subfolder for the catalog files.
4. Click **OK** to close the **Modify Profile Catalog** dialog box.

See also

[Import and export profiles \(page 155\)](#)

[Export a part of the profile catalog \(page 157\)](#)

[Example of profile export file \(page 158\)](#)

[Import profile catalog items \(page 156\)](#)

[Units used in import and export \(page 159\)](#)

Export a part of the profile catalog

If you do not want to export an entire profile catalog, you can export a branch of the profile tree, meaning all the profiles grouped under one rule, or a single profile. Profiles and rule sets are exported from Tekla Structures models as `.lis` files, sketched profiles as `.uel` files, and user-defined parametric profiles as `.clb` files.

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select profiles to be exported.
 - To export a branch of the profile tree, right-click the branch and select **Export Profiles**.

- To export a single profile, right-click the profile and select **Export Profile**.
3. Browse for the folder where you want to save the export files.
By default, the files are saved to the current model folder.
If you are exporting a single profile, enter a name for the file.
 4. Click **OK**.
 5. Click **OK** to close the **Modify Profile Catalog** dialog box.

See also

[Export an entire profile catalog \(page 157\)](#)

[Example of profile export file \(page 158\)](#)

[Import profile catalog items \(page 156\)](#)

[Units used in import and export \(page 159\)](#)

Example of profile export file

The export `.lis` file is divided into specific sections.

The first row in the file is `PROFILE CATALOG EXPORT VERSION = n`, where `n` is the version number.

WARNING Do not delete this row. If the row does not appear in the file, the import is canceled.

The next section defines the hierarchical tree structure that is used to display the contents of the catalog.

The next section contains the profiles.

Fixed profiles

```
PROFILE_NAME = "HEA120";
{
  TYPE = 1; SUB_TYPE = 1001; COORDINATE = 0.000;
  {
    "FLANGE_SLOPE_RATIO"      0.000000000E+000
    "ROUNDING_RADIUS_2"      0.000000000E+000
    "ROUNDING_RADIUS_1"      1.200000000E+001
    "FLANGE_THICKNESS"       8.000000000E+000
    "WEB_THICKNESS"          5.000000000E+000
    "WIDTH"                  1.200000000E+002
    "HEIGHT"                 1.140000000E+002
  }
}
```

Fixed user-defined profiles

Fixed user-defined profiles can have more than one cross section. The profile type for fixed user-defined profiles is 998. `SUB_TYPE` refers to the name of the

cross section definition. When importing fixed user-defined profiles, the relevant cross section definitions must be in the same import file as the profile.

```

PROFILE_NAME = "TAN_HK_TEST_2_CS";
{
TYPE = 998; SUB_TYPE = 253; COORDINATE = 0.000;
{
"EQUIVALENT_TYPE"          11
"FLANGE_SLOPE_RATIO"       0.000000000E+000
"ECCENTRICITY_Y"           0.000000000E+000
"ECCENTRICITY_X"           0.000000000E+000
"ROUNDING_RADIUS_2"        0.000000000E+000
"FLANGE_THICKNESS_2"       0.000000000E+000
"WEB_THICKNESS_2"          0.000000000E+000

```

Cross section definitions

```

CROSS_SECTION_NAME = "MY_OWN_PROFILE"
POINT_NUMBER = 1;
POINT_X = 200.00;
POINT_Y = -200.00;
CHAMFER_TYPE = 0;
CHAMFER_X = 0.00;
CHAMFER_Y = 0.00;
POINT_NUMBER = 2;
POINT_X = 200.00;
POINT_Y = 200.00;
CHAMFER_TYPE = 0;
CHAMFER_X = 0.00;
CHAMFER_Y = 0.00;

```

See also

[Export an entire profile catalog \(page 157\)](#)

[Export a part of the profile catalog \(page 157\)](#)

Units used in import and export

The table below lists the units Tekla Structures uses when importing and exporting profile catalogs and material catalogs.

Type	Unit (if blank, no unit)
Boolean	
Integer	
String	
Ratio	
Strain	
Angle	degree
Length	mm

Type	Unit (if blank, no unit)
Deformation	mm
Dimension	mm
Radius of inertia	mm
Area	mm ²
Reinforcement area	mm ²
Transverse reinforcement area	mm ² /m
Area/unit length	mm ² /m
Volume	mm ³
Section modulus	mm ³
Moment of inertia	mm ⁴
Torsion constant	mm ⁴
Warping constant	mm ⁶
Force	N
Weight	kg
Distributed load	N/m
Spring constant	N/m
Mass/length	kg/m
Surface load	N/m ²
Strength	N/m ²
Stress	N/m ²
Modulus	N/m ²
Density	kg/m ³
Moment	Nm
Distributed moment	Nm/m
Rotation spring constant	Nm/rad
Temperature	K (°C)
Thermal dilation coefficient	1/K (1/°C)
Factor	

See also

[Import profile catalog items \(page 156\)](#)

[Import a material catalog \(page 144\)](#)

[Export an entire profile catalog \(page 157\)](#)

[Export an entire material catalog \(page 145\)](#)

Import and export sketched profiles

To use a sketched profile in other Tekla Structures models, you have to export the profile to a file (*.uel), and then import the file into another Tekla Structures model.

We recommend that you use the profile catalog to import and export sketched profiles. You can also use the **Applications & components** catalog to import sketched profiles together with related custom components.

See also

[Import sketched profiles \(page 161\)](#)

[Export sketched profiles \(page 161\)](#)

Import sketched profiles

After you have exported sketched profiles to a file, you can import them to another Tekla Structures model.

1. Open the Tekla Structures model you want to import to.
2. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
3. Click **Import**.
4. In the **Import Profile Catalog** dialog box, select *.uel from the **Filter** list.
5. Select the file to import.
6. Click **OK**.
7. Click **OK** to close the **Modify Profile Catalog** dialog box.
8. Click **OK** in the **Save confirmation** dialog box to save the changes.

TIP To automatically import all *.uel files from a folder when creating a new model, use the advanced option XS_UEL_IMPORT_FOLDER.

See also

[Export sketched profiles \(page 161\)](#)

Export sketched profiles

1. Open the Tekla Structures model you want to export from.
2. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
3. Right-click the profile you want to export and select **Export Profile**.
4. In the **Export Profile Catalog** dialog box, enter a name for the export file in the **Selection** box.

5. If you want to save the export file to a specific location, browse for the folder.
By default, Tekla Structures saves the export file in the current model folder.
6. Click **OK**.

See also

[Import sketched profiles \(page 161\)](#)

Create your own profiles

You can create your own profiles and save them in the profile catalog.

Use any of the following methods to create user-defined profiles in Tekla Structures:

Profile type	Creation methods
Fixed profile	<ul style="list-style-type: none"> • Create user-defined cross sections (page 162) • Create a fixed profile (page 168) • Create a fixed profile by copying (page 170) • Create a fixed profile based on a parametric profile (page 171)
Parametric profile	<ul style="list-style-type: none"> • Create parametric profiles by sketching (page 172)
Parametric profile with variable cross sections	<ul style="list-style-type: none"> • Create parametric profiles with variable cross sections (page 195)

Create user-defined cross sections

User-defined cross sections can be used for creating fixed profiles. Define the needed cross sections before creating the profile.

Use any of the following methods to define a cross section:

- [Define a cross section using polygon \(page 163\)](#)
Use this method to create a cross section with fixed dimensions.
- [Define a cross section using a plate \(page 164\)](#)
Use this method if you have a contour plate in the model.
- [Define a cross section using a DWG file \(page 166\)](#)
Use this method if you have a .dwg file of the profile you want to define.

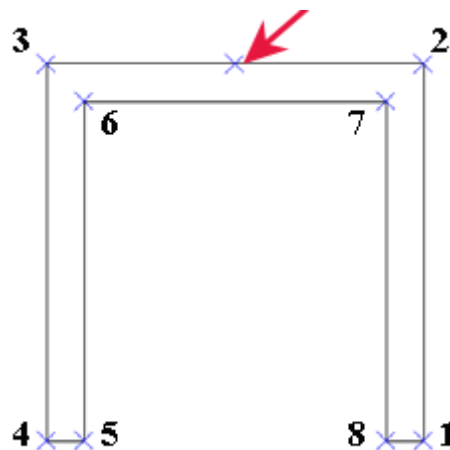
See also

[Create fixed profiles \(page 168\)](#)

Define a cross section using polygon

Define a cross section by picking the shape of the cross section.

1. On the **File** menu, click **Catalogs --> Define profiles --> Define cross section using polygon**.
2. Define a cross section without or with inner contours.
 - To create a cross section with no inner contours:
 - a. Pick the corner points of the cross section to define the shape. Start at the bottom-right corner and pick the points counter clockwise.
 - b. Pick the start point and click the middle mouse button to close the shape.
 - c. Pick the center point of the cross section.

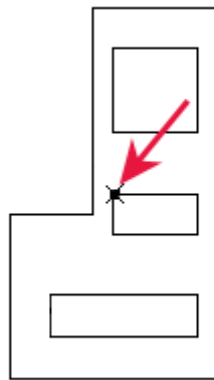


TIP To make it easier to define the shape, insert a reference model of the cross section in the model, and use the reference model as a basis for picking the cross section shape.

Alternatively, you can create a few construction lines or points in the model and use them to define the cross section shape.

If you do not have any actual points to pick, picking the center point of the cross section becomes difficult. This is because the cross section shape disappears after you have clicked the middle mouse button to close the shape.

- To create a cross section with inner contours:
 - a. Pick the corner points of the cross section to define the shape.
 - b. Pick the start point to close the shape.
 - c. Pick the corner points of the cross section inner contour.
 - d. Pick the start point to close the shape
 - e. Repeat until you have picked all inner contours.
 - f. Click the middle mouse button.
 - g. Pick the center point of the cross section.



3. When the **User Profile Cross Section** dialog box appears, enter a name for the cross section.
4. Click **OK** to close the **User Profile Cross Section** dialog box.
5. Click **OK** in the **Save confirmation** dialog box to save the changes.

You can now use the cross section in the profile catalog to create a new profile. The **Profile type** will be **User-defined, fixed**.

See also

[Create a fixed profile \(page 168\)](#)

[Modify a user-defined cross section \(page 167\)](#)

[Define a cross section using a plate \(page 164\)](#)

[Define a cross section using a DWG file \(page 166\)](#)

Define a cross section using a plate

You can define a cross section using a contour plate.

1. Create a contour plate that includes all the chamfers.

2. On the **File** menu, click **Catalogs --> Define profiles --> Define cross section using plate**.

The **Profile Cross-Section from Plate (10)** dialog box appears.

3. On the **Parameters** tab, enter a name in the **Section name** and **Profile name** boxes.

Other properties are optional.

4. Click **OK**.

5. Select the contour plate.

Tekla Structures creates the cross section with the shape of the contour plate.

You can now use the cross section in the profile catalog to create a new profile. The **Profile type** will be **User-defined, fixed**.

See also

[Create a fixed profile \(page 168\)](#)

[Properties: Profile cross-section from plate \(10\) \(page 165\)](#)

[Define a cross section using polygon \(page 163\)](#)

[Define a cross section using a DWG file \(page 166\)](#)

Properties: Profile cross-section from plate (10)

Use the **Parameters** tab to define the profile properties in the **Profile cross-section from plate (10)** component.

Option	Description
Section name	Name of the cross section shown in the Modify Profile Catalog dialog box. If you leave this box empty, no profile is created.
Profile name	Name of the profile shown in the Beam Properties dialog box, and in the Modify Profile Catalog dialog box. If you leave this box empty, no profile is created.
Save to	The location of the profile catalog. Select one of the following options: <ul style="list-style-type: none"> • Model directory: The current model folder. • Global directory: ..\ProgramData\Tekla Structures\<version>\environments\<environment>\profil • Don't save: Does not save the profile. This is useful for testing.

Option	Description
Min distance between points	The minimum distance between the corner points of the cross section. To create simpler drawings of complicated cross sections, increase this value.
Center point offset	The origin of the plate defines the location of the profile reference line. Enter an offset value to move the reference line, relative to the cross section.

See also

[Define a cross section using a plate \(page 164\)](#)

Define a cross section using a DWG file

If a cross section is available in DWG format, you can import the cross section and add it as a DWG profile to the profile catalog.

Tekla Structures supports DWG files that have been created using version ACAD2012 or earlier.

Before you start defining a cross section using a DWG file:

- Save the outline of the cross section as a DWG file. Ensure that the DWG file only contains the outline of the profile.
- Make sure that the cross section is created as a closed polyline.
- Make sure that the outline consists of only one closed polyline. You cannot, for example, define holes to your cross section with this method. If you need holes or openings, use the polygon or the plate creation method.
- Remove hatching and unnecessary lines from the DWG file. Tekla Structures imports all the lines it finds in the DWG file.
- If there are blocks in the DWG file, they must be exploded.

1. Open a model.
2. On the **File** menu, click **Catalogs --> Define profiles --> Define cross section using DWG file**.

The **DWG Profile to Library (6)** dialog box appears.

3. Define the cross section properties and click **OK**.
4. In the model, pick the start and the end points of the cross section to be imported.

Tekla Structures imports the cross section and places the profile reference line at the origin of the DWG file.

You can now use the cross section in the profile catalog to create a new profile. The **Profile type** will be **User-defined, fixed**.

See also

[Create a fixed profile \(page 168\)](#)

[Properties: DWG Profile to Library \(6\) \(page 167\)](#)

[Define a cross section using polygon \(page 163\)](#)

[Define a cross section using a plate \(page 164\)](#)

Properties: DWG Profile to Library (6)

Use the **Parameters** tab to define the profile properties in the **DWG profile to library (6)** component.

Option	Description
Input file	Browse for the DWG file to be imported.
Section name	Name of the cross section shown in the Modify Profile Catalog dialog box.
Profile name	Name of the profile shown in the Modify Profile Catalog dialog box.
Save to	The location of the profile catalog. Select one of the following options: <ul style="list-style-type: none">• Model directory: The current model folder.• Global directory: ..\ProgramData\Tekla Structures\<version>\environments\<environment>\profil• Don't save: Does not save the profile. This is useful for testing.
Min distance between points	The minimum distance between the corner points of the cross section. To create simpler drawings of complicated cross sections, increase this value.
Center point offset	The origin of the plate defines the location of the profile reference line. Enter an offset value to move the reference line, relative to the cross section.

See also

[Define a cross section using a DWG file \(page 166\)](#)

Modify a user-defined cross section

You can modify cross sections that have been defined using a polygon, a plate, or a DWG file.

1. Go to **Quick Launch**, start typing `edit polygon cross section`, and select the **Edit Polygon Cross Section** command from the list that appears.

The **Modify Cross Section** dialog box appears.

2. Select the cross section you want to modify.
3. Modify the cross section point properties.
 - **Number** refers to each point picked when the cross section was created, in numerical order. The first point picked is 1, the second 2, and so on.
 - **Chamfer** refers to the chamfer shape.
 - **x:** and **y:** apply to the chamfer type. For example, if you want the chamfer to be equal on both sides of the angle, only enter a value for **x:**.

For an uneven chamfer, enter values for **x:** and **y:**.

4. Click **Update**.
5. Click **OK** to close the **Modify Cross Section** dialog box.
6. Click **OK** in the **Save confirmation** dialog box to save the changes.

TIP If you want to delete a cross section, select the cross section and click **Delete**.

See also

[Define a cross section using polygon \(page 163\)](#)

[Define a cross section using a plate \(page 164\)](#)

[Define a cross section using a DWG file \(page 166\)](#)

Create fixed profiles

You can create new fixed profiles either from scratch or by copying an existing one. You can also convert a parametric profile into a fixed one.

Click the links below to find out more:

[Create a fixed profile \(page 168\)](#)

[Create a fixed profile by copying \(page 170\)](#)

[Create a fixed profile based on a parametric profile \(page 171\)](#)

[Modify a fixed profile \(page 171\)](#)

Create a fixed profile

You can create fixed profiles with a single cross section or with multiple cross sections. Note that cross sections affect the total weight of the profile.

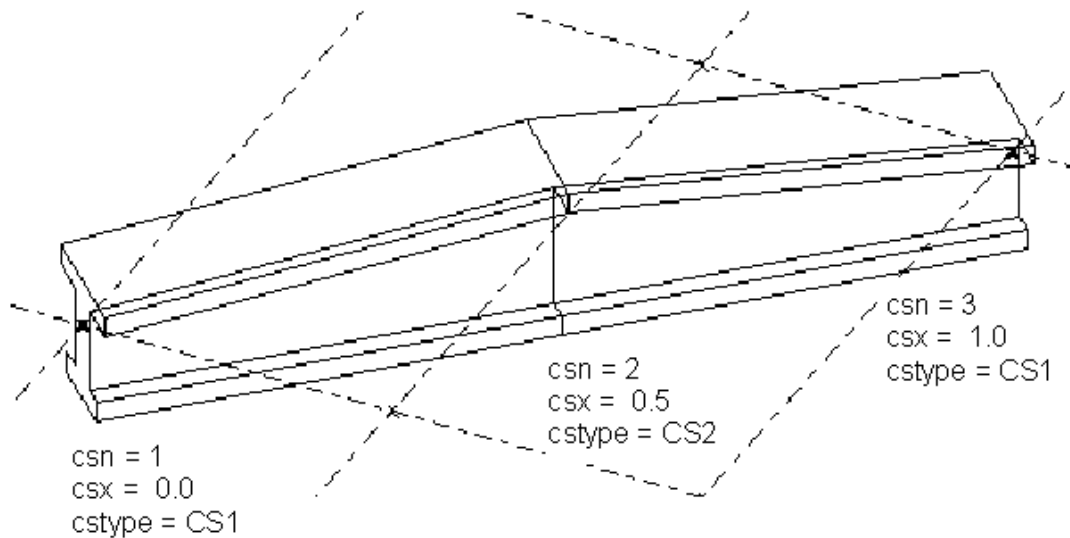
WARNING If you create a profile with multiple cross sections, create the cross sections with the same number of corner points and in the same order.

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Right-click anywhere in the profile tree and select **Add Profile**.
A new fixed profile with the name **PROFILE1** is created.
3. Change the profile name by entering a new name in the **Profile name** box.
The profile name must be in upper case letters, with no spaces. Tekla Structures automatically converts lower case letters to upper case letters.
4. In the **Profile type** list, select **User-defined, fixed**.
5. In the **Profile subtype** list, select the cross section you want to use.
If you have [created your own user-defined cross sections \(page 162\)](#), you can use one of them.
6. Under **Equivalent type**, select a profile type that matches the new cross section as closely as possible. This is important because some connections only work for certain types of profiles.
The equivalent type and the profile dimensions, such as height and width, affect which connections can be applied to the profile. An unsuitable equivalent type or missing dimension values may result in problems with connections.
7. Click **Update**.
8. Modify the dimension values.
Always enter values for the dimensions **Height h** and **Width b**, as these values affect how Tekla Structures displays the profiles. If the values are 0, the part is drawn as a line.
9. Under **Cross section**, define a relative location for each cross section:
 - a. In the **Number** list, select the number of the cross section.
 - b. In the **Relative location** box, enter the location of the cross section.
This value indicates the location of the cross section along the axis: 0.0 for the start end and 1.0 for the second end. If you only have a single cross section, select 1 for **Number** and enter 0.000 for **Relative location**.
 - c. Click **Update** after defining each cross section.
10. Click **Add** to add more cross sections, if needed.
11. If you want to use a different cross section in the profile, select a new one from the **Profile subtype** list.

12. If you want to remove a cross section, select the cross section from the **Number** list and click **Remove**.
13. Click **OK** to close the **Modify Profile Catalog** dialog box.
14. Click **OK** in the **Save confirmation** dialog box to save the changes.

Example

For a pitched profile, you need two cross sections with the same center point height. The **Relative location** value is 0.0 for the first cross section, 0.5 for the second cross section, and 1.0 for the third cross section.



See also

[Create a fixed profile by copying \(page 170\)](#)

[Modify a fixed profile \(page 171\)](#)

[Delete a profile from the profile catalog \(page 154\)](#)

Create a fixed profile by copying

You can create new fixed profiles by modifying a copy of an existing, similar profile.

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select a fixed profile that is similar to the one you wish to create.
3. Right-click and select **Copy Profile**.

A new profile with the name **<existing_profile_name COPY>** is created.

4. Change the profile name by entering a new name in the **Profile name** box.

The profile name must be in upper case letters, with no spaces. Tekla Structures automatically converts lower case letters to upper case letters.

5. Modify the profile properties on the **General**, **Analysis**, and **User attributes** tabs.

WARNING Under **Equivalent type**, select a profile type that matches the new cross section as closely as possible. This is important because some connections only work for certain types of profiles.

Always enter values for the dimensions **Height h** and **Width b**, as these values affect how Tekla Structures displays the profiles. If the values are 0, the part is drawn as a line.

The equivalent type and the profile dimensions, such as height and width, affect which connections can be applied to the profile. An unsuitable equivalent type or missing dimension values may result in problems with connections.

6. Click **Update**.
7. Click **OK** to close the **Modify Profile Catalog** dialog box.
8. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Create a fixed profile \(page 168\)](#)

[Modify a fixed profile \(page 171\)](#)

Create a fixed profile based on a parametric profile

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select a parametric profile from the list.
3. Right-click and select **Add Profile**.


A new standard fixed profile is created, and it has the profile values of the parametric profile.

See also

[Create fixed profiles \(page 168\)](#)

Modify a fixed profile

If necessary, you can modify existing fixed profiles using the profile catalog. Note that the fixed profiles conform to industry standards, and you should not modify them unless you are an administrator.

1. On the **File** menu, click **Catalogs --> Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Select a fixed profile  in the tree and modify its properties.
 - The **General** tab contains information on profile types and dimensions.
 - The **Analysis** tab contains information on the properties used in structural analysis. The structure can be analyzed with different analysis software.
 - The **User attributes** tab is for viewing or entering user attributes for profiles.
3. When you have finished modifying the profile, click **Update**.
4. Click **OK** to close the **Modify Profile Catalog** dialog box.

Tekla Structures asks if you want to save the changes to the model folder.
5. Click **OK** in the **Save confirmation** dialog box to save the changes.

See also

[Create a fixed profile \(page 168\)](#)

[Create a fixed profile by copying \(page 170\)](#)

Create parametric profiles by sketching

This section explains how to create parametric user-defined profiles by sketching. You can change the dimensions of parametric profiles each time you use them in a model.

Click the links below to find out more:

[Open the sketch editor \(page 173\)](#)

[Sketch the outline of a profile \(page 175\)](#)

[Refine the shape of a sketched profile \(page 177\)](#)

[Add dimensions to a sketched profile \(page 182\)](#)

[Define positioning planes for a sketched profile \(page 186\)](#)

[Check a sketched profile \(page 191\)](#)

[Save a sketched profile \(page 191\)](#)

[Modify a sketched cross section \(page 192\)](#)

[Use sketched profiles in a model \(page 195\)](#)

(page 0)

Open the sketch editor

Use the sketch editor to create and modify sketched profiles.

1. Open a Tekla Structures model.
2. On the **File** menu, click **Editors** --> **Define cross section in sketch editor**.

Tekla Structures opens the sketch editor, the **Sketch Browser**, and the **Variables** dialog box.

When you first open the sketch editor, the view is empty. The grid coordinates and labels that you see in the sketch editor depend on the grid properties of your actual Tekla Structures model.



See also

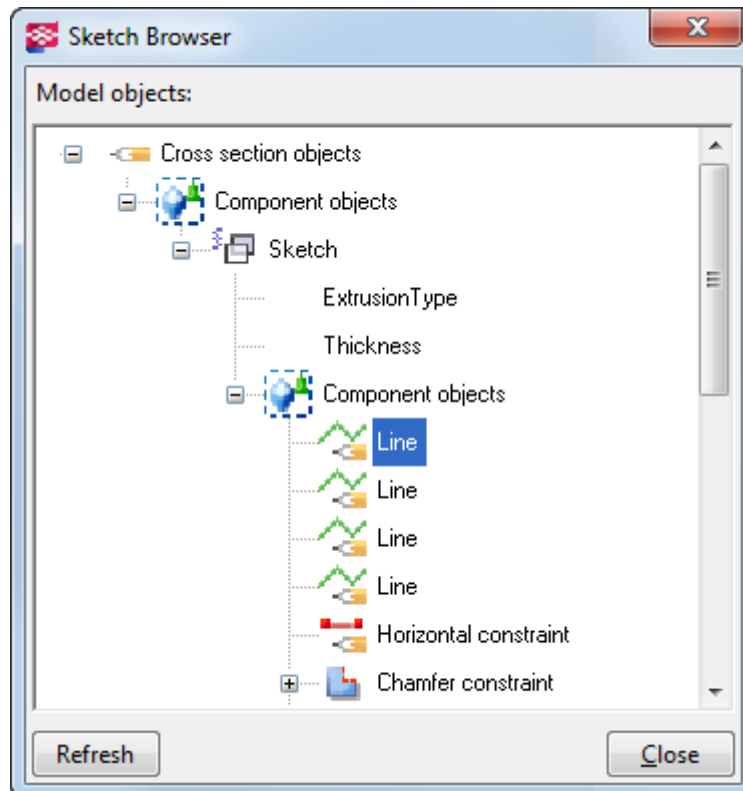
[Sketch Browser \(page 174\)](#)

[Variables in sketched profiles \(page 175\)](#)

Sketch Browser

The **Sketch Browser** shows the objects (lines, arcs, circles, constraints, dimensions, and chamfers) of a sketched profile in a hierarchical, tree-like structure. The **Sketch Browser** automatically opens when you open the sketch editor.

When you click an object in the sketch editor, Tekla Structures highlights the object in the **Sketch Browser**, and vice versa.



The **Sketch Browser** displays the following information about a sketched profile:

- Extrusion type (0, 1, or 2) and thickness of the sketched profile
- Lines, arcs, and circles
- Constraints
- Distances and dimensions and their values
- Chamfers and their type (0=**None**, 1=**Line** ... 7=**Line and arc**) and dimensions.

See also

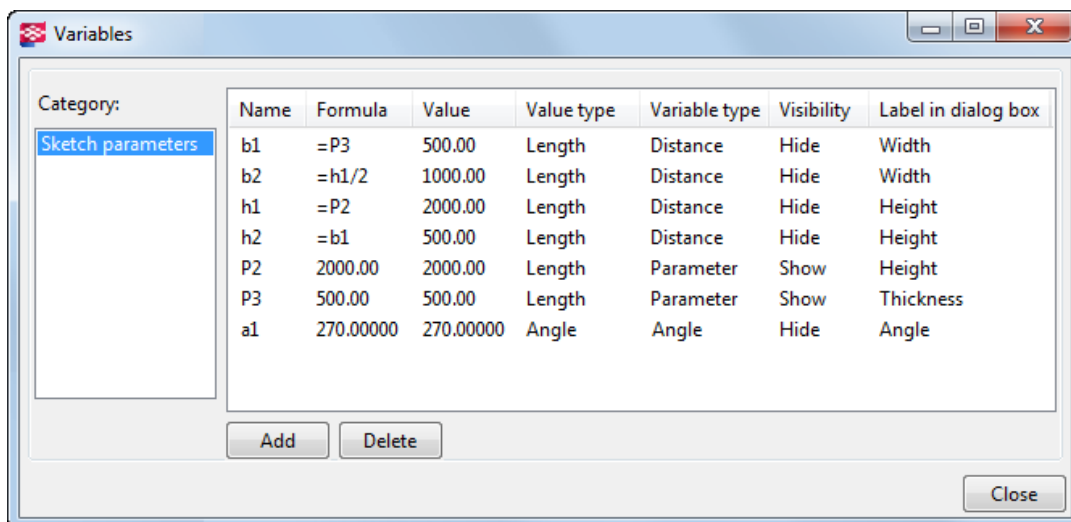
[Open the sketch editor \(page 173\)](#)

[Extrusion types \(page 194\)](#)

Variables in sketched profiles

Use the **Variables** dialog box to define the properties of a sketched profile. Variables can define fixed properties, or they can include formulas, so that Tekla Structures calculates the property value each time you use the profile in a model.

The **Variables** dialog box automatically opens when you open the sketch editor.



NOTE The **Variables** dialog box functions the same way as the corresponding dialog box in the custom component editor. For more information on how to use variables, see [Add variables to a custom component](#).

See also

[Open the sketch editor \(page 173\)](#)

Sketch the outline of a profile

When you create a new sketched profile, start by sketching the outline and the holes of the profile using lines, arcs, and circles.

Ensure that you create a closed shape, unless you are creating a profile of a consistent thickness, such as a cold-rolled profile.

See also


[Sketch a polyline \(page 176\)](#)

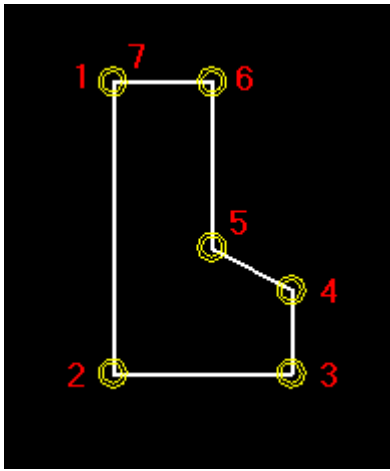
[Sketch an arc \(page 176\)](#)

[Sketch a circle \(page 177\)](#)

Sketch a polyline

You can create line segments in the sketch editor by picking points. Tekla Structures automatically creates coincident constraints between the line segments and displays a chamfer symbol where line segments meet.

1. Open the sketch editor.
2. Click the **Sketch polyline** button: .
3. Pick points to create each line segment.
4. Click the middle mouse button to create the polyline.




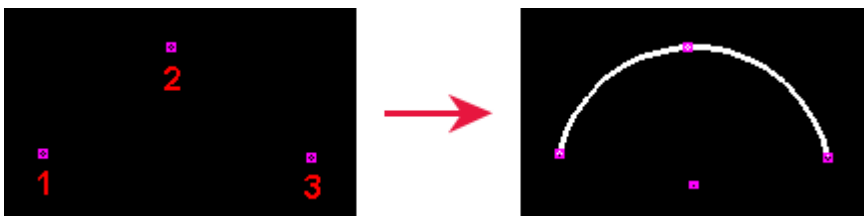
See also

[Sketch the outline of a profile \(page 175\)](#)

Sketch an arc

You can create an arc in the sketch editor by picking three points.

1. Open the sketch editor.
2. Click the **Sketch arc** button: .
3. Pick three points to define the arc.




TIP You can use the advanced option `XS_CS_CHAMFER_DIVIDE_ANGLE` to define the smoothness of the arc.

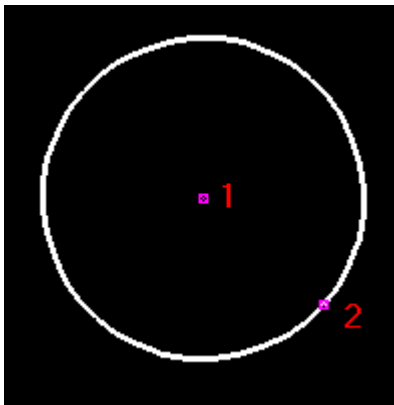
See also

[Sketch the outline of a profile \(page 175\)](#)

Sketch a circle

You can create a circle in the sketch editor by picking two points.

1. Open the sketch editor.
2. Click the **Sketch circle** button: .
3. Pick a point to indicate the center of the circle (1).
4. Pick a point to indicate the radius of the circle (2).



See also

[Sketch the outline of a profile \(page 175\)](#)

Refine the shape of a sketched profile

After you have sketched the outline of a profile, use *constraints* to refine your sketch and lock the shape. For example, you can straighten lines, create 90 degree angles, force lines to meet, close the shape, and add chamfers in corners.

To straighten the entire profile, use horizontal and vertical constraints in conjunction with other constraints. Although the shape is locked, you can still rotate the profile in the model.

See also

[Add a parallel constraint \(page 178\)](#)

[Add a perpendicular constraint \(page 178\)](#)

[Add a coincident constraint \(page 179\)](#)

[Add a fixed constraint \(page 180\)](#)

[Add a horizontal constraint \(page 180\)](#)


[Add a vertical constraint \(page 181\)](#)

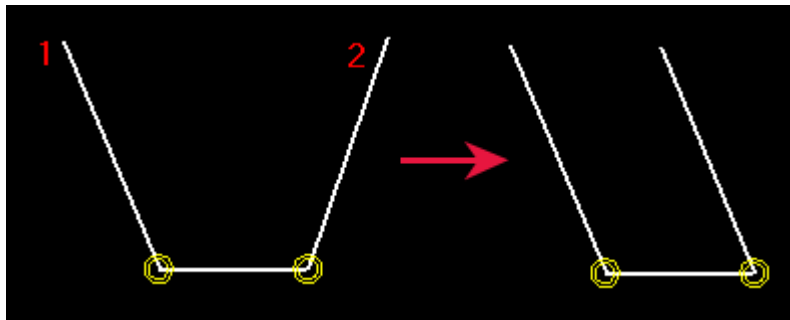
[Delete a constraint \(page 181\)](#)

Add a parallel constraint

You can force two lines in a sketched profile to be parallel to each other.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Parallel constraint** button: .
2. Select a line in the sketch (1).
3. Select another line in the sketch (2).




See also

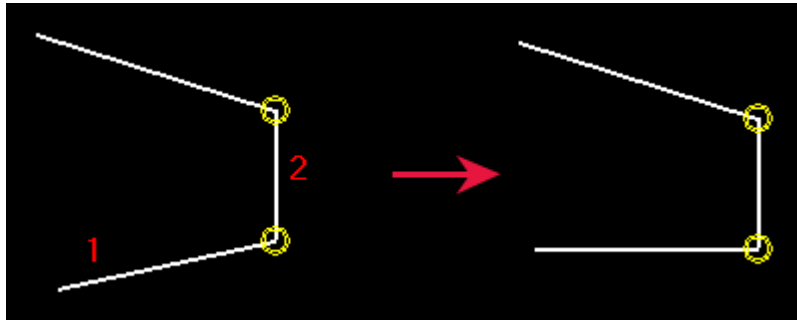
[Refine the shape of a sketched profile \(page 177\)](#)

Add a perpendicular constraint

You can force a line in a sketched profile to be at a 90 degree angle to another line you select. The lines do not have to intersect.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Perpendicular constraint** button: .
2. Select a line in the sketch (1).
3. Select another line in the sketch (2).



See also

[Refine the shape of a sketched profile \(page 177\)](#)



Add a coincident constraint

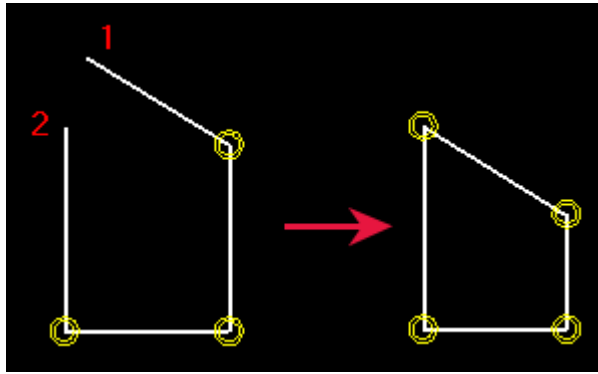
You can force two lines in a sketched profile to start or end at the same point, by extending or shortening one or both lines. The lines do not have to intersect.

NOTE Tekla Structures automatically creates coincident constraints:

- Where two lines meet.
 - Between line segments when you draw them with the **Sketch polyline** tool.
 - Between the start of the first line segment and the end of the last line segment in a shape, if they are within a certain distance of each other.
-

Before you start, sketch the outline of the profile in the sketch editor.

1. Ensure that the **Snap to end points**  snap switch is active.
2. Click the **Coincident constraint** button: .
3. Pick the end of the first line (1).
4. Pick the end of the second line. (2)




See also

[Refine the shape of a sketched profile \(page 177\)](#)

Add a fixed constraint

You can lock the position and angle of a line in a sketched profile so that other constraints do not affect it.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Fixed constraint** button: .
2. Select a line in the sketch.


See also

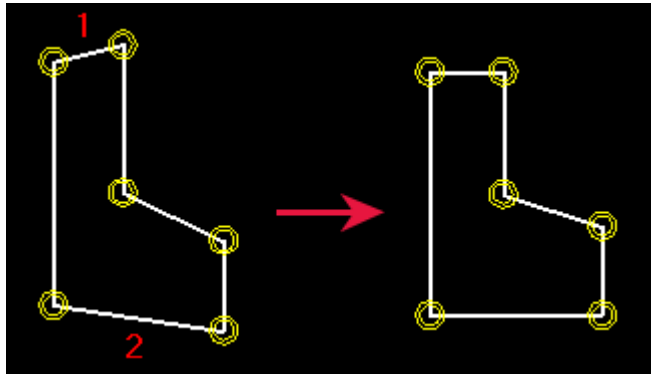
[Refine the shape of a sketched profile \(page 177\)](#)

Add a horizontal constraint

Use horizontal constraints to force a line in a sketched profile to be parallel to the local x axis. Tekla Structures automatically creates horizontal constraints when you create lines that are nearly horizontal.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Horizontal constraint** button: .
2. Select the lines you want to straighten (1, 2).




See also

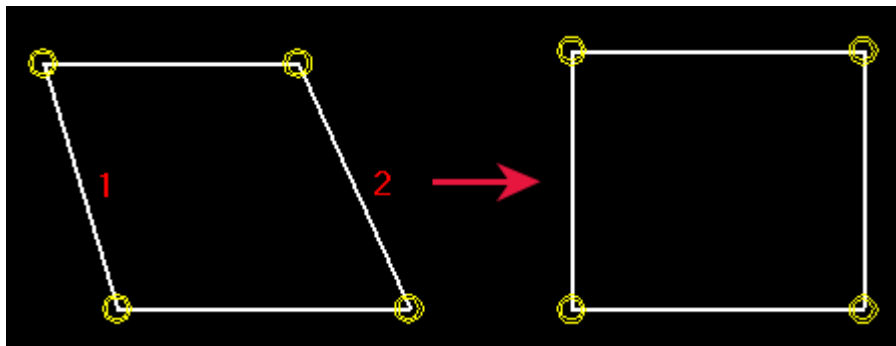
[Refine the shape of a sketched profile \(page 177\)](#)

Add a vertical constraint

Use vertical constraints to force a line in a sketched profile to be parallel to the local y axis. Tekla Structures automatically creates vertical constraints when you create lines that are nearly vertical.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Vertical constraint** button: 
2. Select the lines you want to straighten (1, 2).




See also

[Refine the shape of a sketched profile \(page 177\)](#)

Delete a constraint

You can delete constraints from sketched profiles.

1. Click  to open the **Sketch Browser**.
2. Select the constraint you want to delete.
3. Right-click and select **Delete**.

4. Click **Refresh**.

See also

[Refine the shape of a sketched profile \(page 177\)](#)

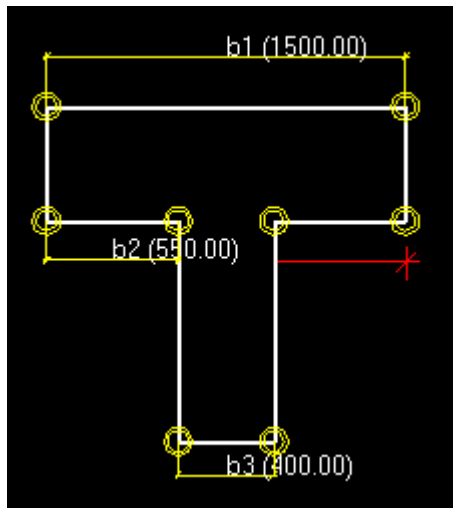
Add dimensions to a sketched profile

After you have sketched a profile, use dimensions to make different distances in the profile parametric. You can use these dimensions to define the size of the profile when you use it in a model.

Tekla Structures also adds the dimensions you create to the list of variables that you can use in calculations.

NOTE Do not create too many dimensions in a sketch, or the dimensions will not be able to adjust when the values are changed.

In the following example, if you create the dimension marked in red, the dimension b1 will no longer work:



See also

[Add a radial dimension to a sketch \(page 182\)](#)

[Add an angle dimension to a sketch \(page 183\)](#)

[Add a dimension between two points in a sketch \(page 184\)](#)

[Add a horizontal dimension to a sketch \(page 184\)](#)


[Add a vertical dimension to a sketch \(page 185\)](#)

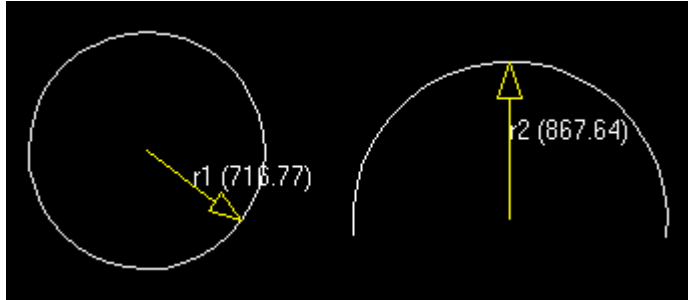
[Delete a dimension from a sketch \(page 185\)](#)

Add a radial dimension to a sketch

You can create a radial dimension for an arc or a circle in a sketched profile.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Sketch radial dimension** button: .
2. Select the arc or circle.




See also

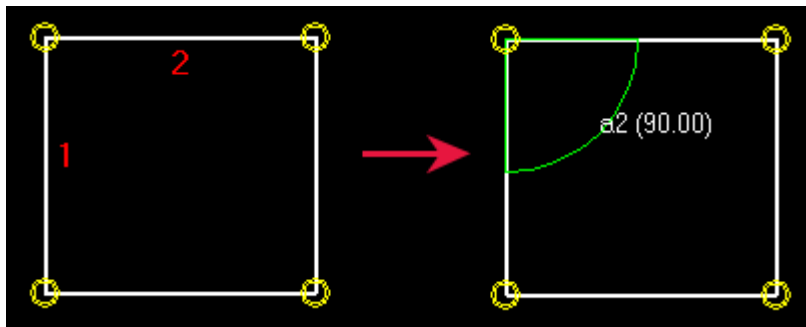
[Add dimensions to a sketched profile \(page 182\)](#)

Add an angle dimension to a sketch

You can create an angle dimension between two lines in a sketched profile. The angle is calculated counter clockwise from the first line you select.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Sketch angle dimension** button: .
2. Select the first line (1).
3. Select the second line (2).



TIP If you are unable to see the angle symbol, scroll with the mouse wheel to zoom in.


See also

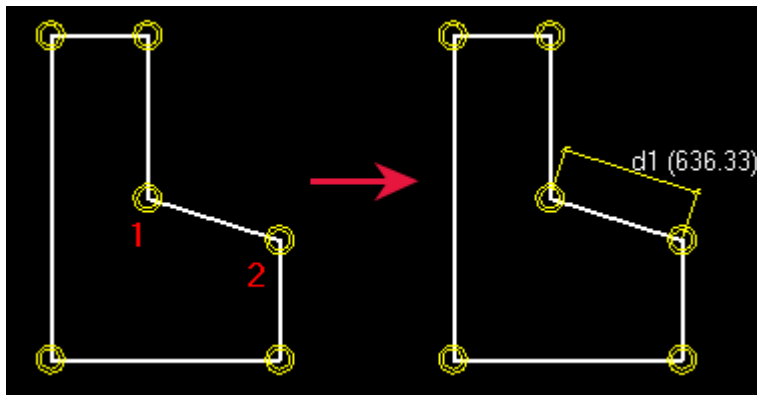
[Add dimensions to a sketched profile \(page 182\)](#)

Add a dimension between two points in a sketch

You can add a dimension to a sketched profile, between two points you pick.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Sketch free dimension** button: 
2. Pick a point to indicate the start point of the dimension (1).
3. Pick a point to indicate the end point of the dimension (2).
4. Pick a point to indicate the location of the dimension lines and text.




See also

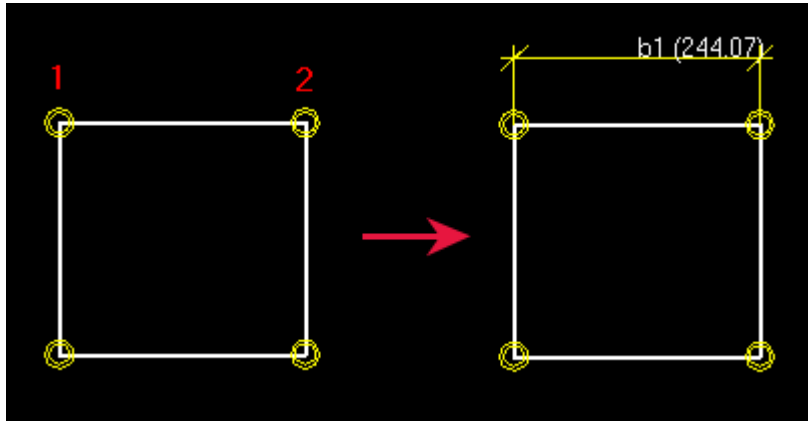
[Add dimensions to a sketched profile \(page 182\)](#)

Add a horizontal dimension to a sketch

You can add a horizontal dimension to a sketched profile, between two points you pick.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Sketch horizontal dimension** button: .
2. Pick a point to indicate the start point of the dimension (1).
3. Pick a point to indicate the end point of the dimension (2).
4. Pick a point to indicate the location of the dimension lines and text.




See also

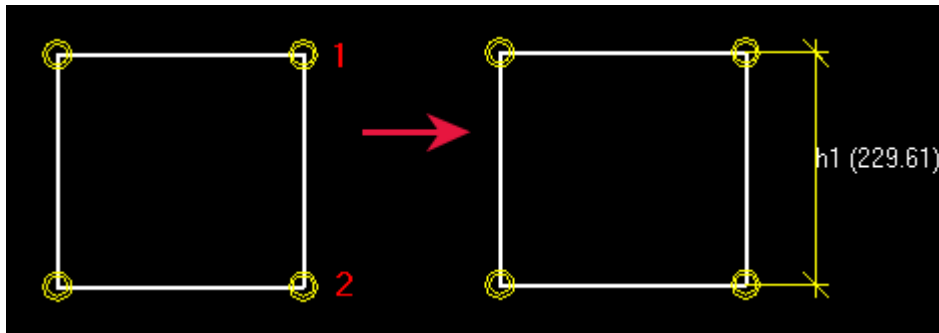
[Add dimensions to a sketched profile \(page 182\)](#)

Add a vertical dimension to a sketch

You can add a vertical dimension to a sketched profile, between two points you pick.

Before you start, sketch the outline of the profile in the sketch editor.

1. Click the **Sketch vertical dimension** button: .
2. Pick a point to indicate the start point of the dimension (1).
3. Pick a point to indicate the end point of the dimension (2).
4. Pick a point to indicate the location of the dimension lines and text.



See also

[Add dimensions to a sketched profile \(page 182\)](#)

Delete a dimension from a sketch

When you want to delete a dimension from a sketch, you can do it in the sketch editor view, in the **Variables** dialog box, or in the **Sketch browser**.

1. Select the dimension you want to delete.

2. Do one of the following:
 - In the sketch editor view or in the **Sketch browser**, right-click and select **Delete**.
 - In the **Variables** dialog box, click the **Delete** button.

See also

[Add dimensions to a sketched profile \(page 182\)](#)

Define positioning planes for a sketched profile

When you sketch a profile, you can define *positioning planes* for it. With positioning planes you can determine the planes Tekla Structures will use for positioning parts and components.

See also

[Part positioning planes \(page 186\)](#)

[Connection positioning planes \(page 187\)](#)

[Show and hide positioning planes \(page 188\)](#)

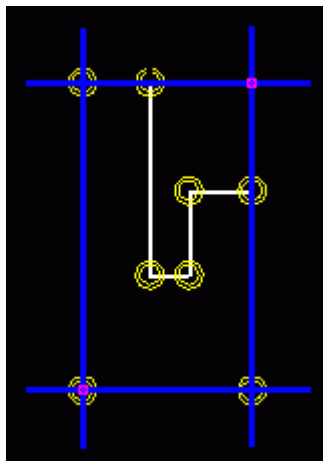
[Move positioning planes \(page 189\)](#)

[Revert to default positioning planes \(page 190\)](#)

Part positioning planes

With part positioning planes you can determine how Tekla Structures positions parts that have a sketched profile. These planes are used for the **On plane** and **At depth** settings for parts, and also when placing custom components that are bound to boundary planes.

The part positioning planes are displayed in blue:



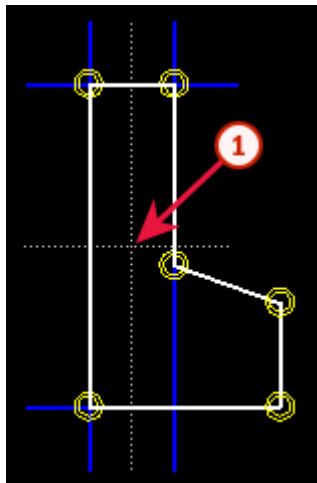
The **On plane** options **Left** and **Right** are set according to the vertical blue planes, and the **Middle** option is halfway between them.

The same principle applies to the **At depth** setting: the **Front** and **Behind** options are set according to the horizontal blue planes, and the **Middle** option is halfway between them.

Position		
<input checked="" type="checkbox"/> On plane:	Middle ▼	0.00
<input checked="" type="checkbox"/> Rotation:	Top ▼	-0.00000
<input checked="" type="checkbox"/> At depth:	Middle ▼	-0.00

Example

You can define part positioning planes so that an asymmetric profile will be positioned according to its web only. In the following example, the **Middle** option is illustrated in gray dotted lines:



1 Middle option

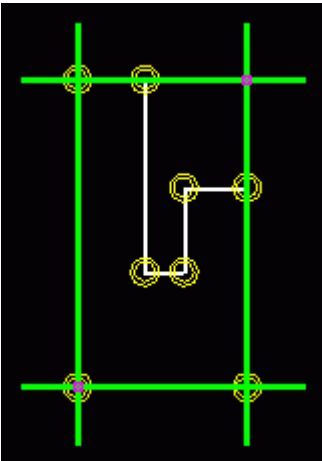
See also

[Define positioning planes for a sketched profile \(page 186\)](#)

Connection positioning planes

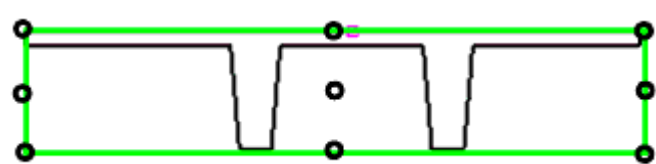
With *connection positioning planes* you can determine how Tekla Structures positions components in relation to the component main part that has a sketched profile.

The connection positioning planes are displayed in green:

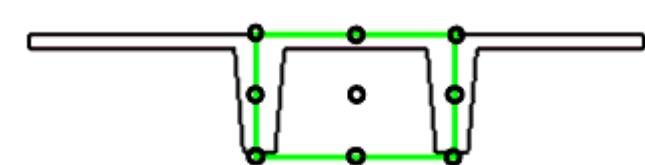


Example

The following image shows the default connection positioning planes of a double tee slab that was created as a sketched profile. The green line illustrates the default connection positioning planes.



To place connections according to the location of the stems of the double tee, move the connection positioning planes as shown below.





See also

[Define positioning planes for a sketched profile \(page 186\)](#)

Show and hide positioning planes

To show or hide the positioning planes, do one of the following:

To	Do this
Show or hide part positioning planes	Click  .
Show or hide connection positioning planes	Click  .

See also

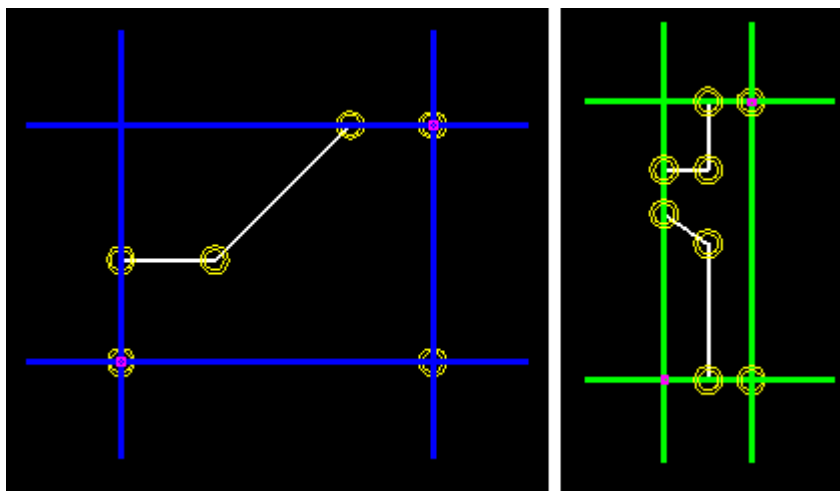
[Define positioning planes for a sketched profile \(page 186\)](#)

Move positioning planes

You can move the positioning planes by moving their handles. Note that if you move the handles away from the outmost corners of the sketched profile, you must bind them by adding a dimension to each handle. Otherwise the positioning will not function correctly in the model.

1. Click the positioning plane to display the handles.

The handles are displayed in pink. By default, the handles are at the outmost corners of the sketched profile. For example:



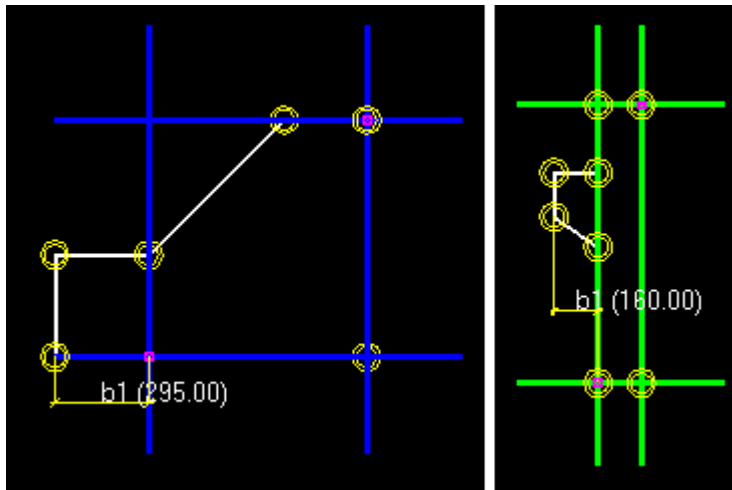
2. Click a handle to select it.

NOTE The same handle controls both the vertical and horizontal plane, so you can move them both at the same time.

3. Move the handle like any other object in Tekla Structures.
For example, right-click and select **Move**.
4. If the handle is not at the outmost corner of the profile, add a dimension between the handle and the corner.

Example

In the following examples, the left handle of the positioning plane has been bound by using a horizontal dimension (b1):



See also





[Define positioning planes for a sketched profile \(page 186\)](#)

[Show and hide positioning planes \(page 188\)](#)

Revert to default positioning planes

You can revert back to the default positioning planes of a sketched profile if you have moved the planes.

To revert to the default positioning planes, do one of the following:

To	Do this
Revert to the default part positioning planes	<ol style="list-style-type: none"> 1. Click  to show the part positioning planes. 2. Select the part positioning planes. 3. Right-click and select Delete. 4. Click  again to check that the planes have reverted back to the default.
Revert to the default connection positioning planes	<ol style="list-style-type: none"> 1. Click  to show the connection positioning planes. 2. Select the connection positioning planes. 3. Right-click and select Delete. 4. Click  again to check that the planes have reverted back to the default.

See also

[Define positioning planes for a sketched profile \(page 186\)](#)

Check a sketched profile

You can check that the constraints and dimensions in a sketched profile work correctly.

1. Double-click a dimension line to open the **Distance Properties** dialog box.
2. Change the **Value** box.
3. Click **Modify**.
Tekla Structures updates the profile in the sketch editor.
4. Check that the shape of the profile does not change and that the dimensions adjust correctly.
5. Click **Cancel** to close the **Distance Properties** dialog box.

See also

[Use sketched profiles in a model \(page 195\)](#)



Save a sketched profile


Tekla Structures saves the sketched profiles in the current model folder, in the `xslib.db1` file, which is a library file containing custom components and sketches. Sketched profiles are available in the **Others** section in the profile catalog.

NOTE Note the following limitations when naming sketched profiles:

- You cannot use the name of a fixed profile.
 - You cannot include numbers, special characters, or blank spaces in the profile name.
 - Lower case letters are automatically converted into upper case letters.
-

To save a sketched profile, do one of the following:

To	Do this
Save a new profile	<ol style="list-style-type: none">1. Click Save sketch .2. Enter a name in the Prefix box, and then click OK.
Update an existing profile	<ol style="list-style-type: none">1. Click Save sketch .

To	Do this
	2. Click Yes when prompted to update the existing cross section.
Save a copy of the profile under a different name	1. Click Save sketch as  . 2. Enter a new name in the Prefix box, and then click OK .


See also

[Import and export sketched profiles \(page 161\)](#)

Modify a sketched cross section

You can modify existing sketched profiles, for example, by modifying chamfers or dimensions. You can also move corners or holes by moving the handles. The chamfers are moved automatically when you move the handles.

-
- NOTE** • You cannot change dimensions that have been calculated using formulas in the **Variables** dialog box.
- Constraints may also prevent you from changing dimensions.
-

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Open the **Others** branch at the end of the profile tree.
3. Right-click a sketched profile, and then select **Edit profile** to open the profile in the sketch editor.
4. Double-click a sketch object to modify its properties.
The sketch objects you can modify appear in yellow.
5. Modify the properties and then click **Modify**.
6. Close the sketch object properties dialog box.
7. Click the **Save sketch as** icon  to save the changes.


See also


[Modify chamfers in a sketch \(page 192\)](#)

[Set the sketch thickness \(page 193\)](#)

Modify chamfers in a sketch

You can change the shape and dimensions of chamfers in a sketched profile. For example, you can create rounded profile corners.

1. Double-click a chamfer symbol  in the sketch editor.

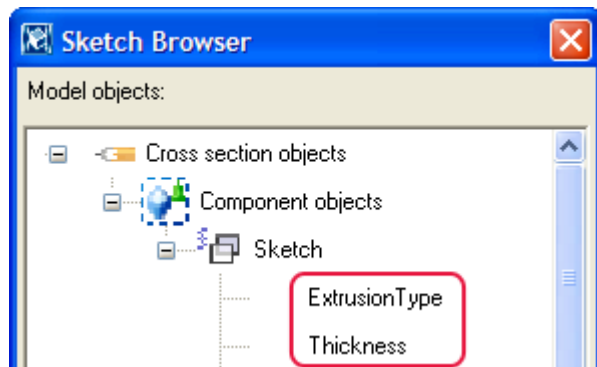
2. In the **Chamfer Properties** dialog box, change the shape and dimensions of the chamfer.
3. Click **Modify**.
4. Click **OK** to close the dialog box.
5. Click the **Save sketch as** icon  to save the changes.

See also


[Modify a sketched cross section \(page 192\)](#)

Set the sketch thickness

If you have sketched an open shape, such as a cold-rolled section, you must define the extrusion type and thickness of the sketch in the **Sketch Browser**. The thickness can be either fixed or parametric.



1. In the sketch editor, sketch an open polyline.
2. Do one of the following:
 - To set a fixed thickness:
 - a. In the **Sketch Browser**, right-click **Thickness** and select **Add Equation**.
 - b. Enter the value of the thickness after =.
 - To define a parametric thickness:
 - a. In the **Variables** dialog box, add a new parameter variable for **Length** (for example, P1).
 - b. In the **Formula** column, define the default value for the parameter variable.
 - c. In the **Sketch Browser**, right-click **Thickness** and select **Add Equation**.
 - d. Enter the name of the parameter variable (for example, P1) after =.

3. To define the extrusion type:
 - a. In the **Sketch Browser**, right-click **Extrusion Type** and select **Add Equation**.
 - b. Enter the extrusion type number (0, 1, or 2) after =.
4. Click the **Save sketch as** icon  to save the changes.

See also

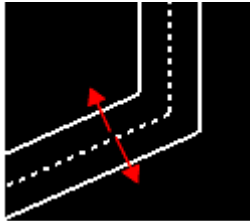
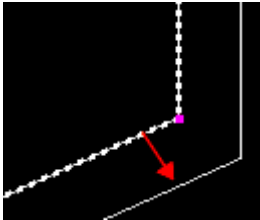
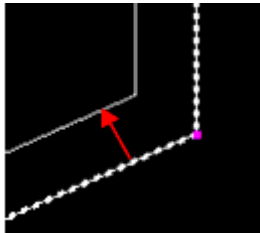
[Modify a sketched cross section \(page 192\)](#)

[Extrusion types \(page 194\)](#)

Extrusion types

The extrusion type defines how a sketched profile of a consistent thickness is extruded. When you change the thickness, the profile grows inwards, outwards, or symmetrically in both directions, depending on the extrusion type. You must define the extrusion type for sketches that consist of an open polyline.

The extrusion types are:

Type	Description	Image
0	The sketch is extruded symmetrically to the outside and inside of the polyline. (Default)	
1	The sketch is extruded to the outside of the polyline.	
2	The sketch is extruded to the inside of the polyline.	



See also

[Set the sketch thickness \(page 193\)](#)

Use sketched profiles in a model

Once you have created a sketched profile and saved it, you are ready to use it in the model. If you have applied constraints correctly, the shape of the profile will be maintained when you change its dimensions.

To use a sketched profile for a new part in a model:

1. Open the part properties in the property pane.
For example, to open the beam properties, on the **Steel** tab, hold down **Shift** and click .
Shift and click .
2. Click the ... button next to the **Profile** box.
The **Select Profile** dialog box appears.
3. Open the **Others** branch at the end of the profile tree.
4. Select a sketched profile.
5. If the profile is parametric, you can define its dimensions in the **Value** column on the **General** tab.
6. Click **OK** to close the **Select Profile** dialog box.
7. Pick points to place the part in the model.

See also

[Create an image of a profile \(page 199\)](#)

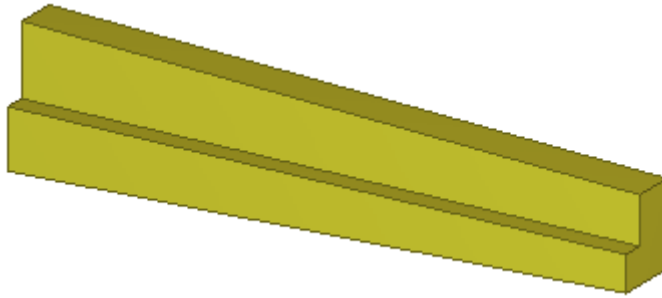
Create parametric profiles with variable cross sections

You can create parametric user-defined profiles with variable cross sections using the **Profile Editor**. You can use a profile with variable cross sections like any other parametric profile.

You can:

- Use a cross section with different dimensions at different locations in a profile.
- Modify the variables of the cross sections and the profile.
- Save the profile and use it as a parametric profile through the profile catalog.

- Import and export variable cross section profiles.



NOTE When you use this method, only the dimensions of a variable cross section can vary, not the actual shape of the cross section. If you want to use several different cross section shapes in the profile, create a fixed profile with multiple cross sections instead.

See also

[Create a profile with variable cross sections \(page 196\)](#)

[Modify a profile with variable cross sections \(page 198\)](#)

[Create a fixed profile \(page 168\)](#)

Create a profile with variable cross sections

Before you start:

- Create a sketched profile using the sketch editor.
- In the **Variables** dialog box in the sketch editor, set **Visibility** to **Show** for the dimensions that you want to change when using the profile in a model.

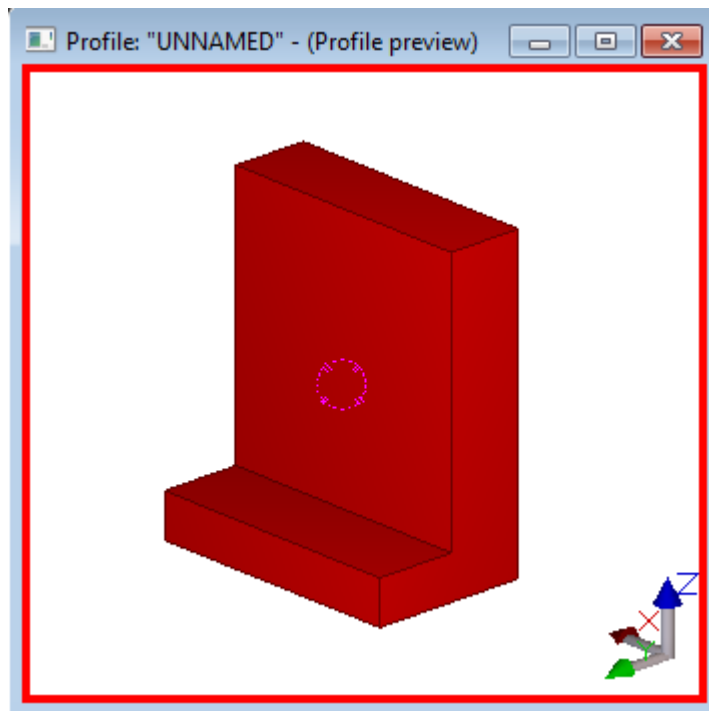
1. Go to **Quick Launch**, start typing `define profile with variable cross section`, and select the **Define Profile with Variable Cross Section** command from the list that appears.

The **Define Profile with Variable Cross Section** dialog box opens.

2. Select the sketch you want to use as the start and end cross section of the profile.

3. Click **OK**.

The **Profile Editor** and the **Profile preview** view appear.

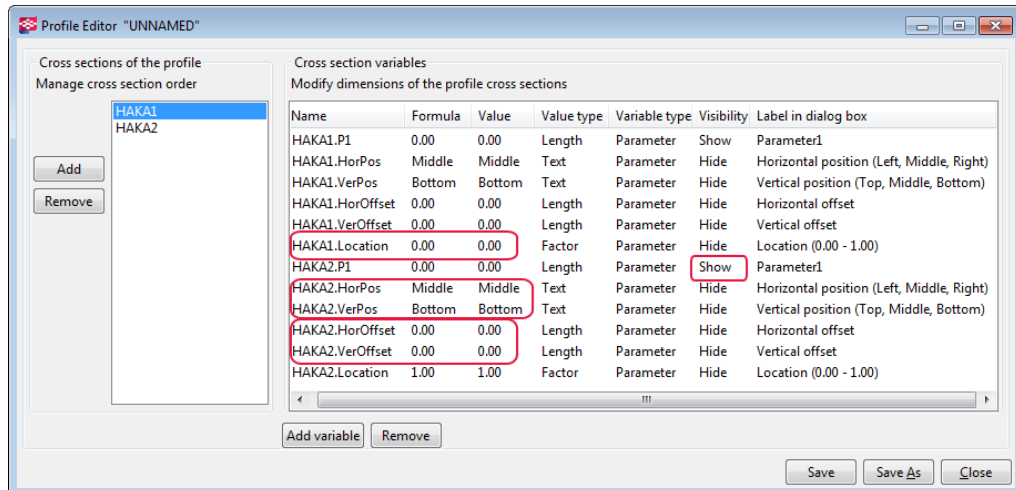


4. Under **Cross sections of the profile**, add cross sections or remove selected cross sections by clicking **Add** or **Remove**.

When you click **Add**, Tekla Structures adds a new cross section at the end of the profile, at the location 1.0., and moves the existing cross sections towards the start of the profile. By default, cross sections are located at 0.1 intervals in the profile.

5. Under **Cross section variables**, define the following:

- The relative location of each cross section in the profile.
Use the `*.Location` variables. For example, start=0.00, middle=0.5, end=1.00.
- How the cross sections are aligned in the horizontal and vertical direction.
Use the `*.HorPos` and `*.VerPos` variables.
- How much the cross sections are offset from the alignment.
Use the `*.HorOffset` and `*.VerOffset` variables.



6. If you have added new cross sections, check that they do not overlap any existing cross sections.
7. Set **Visibility** to **Show** for the dimensions that you want to change when using the profile in a model.
8. If you want to use parameter variables and equations to define the cross section dimension, click **Add variable** and define the variable values.
9. Save the profile.
 - a. Click **Save**.
 - b. In the **Save profile as** dialog box, enter a unique name for the profile.

You cannot include numbers in the profile name, or use the name of a standard profile.

- c. Click **OK**.

Tekla Structures saves the profile in the current model folder.

See also

[Create parametric profiles with variable cross sections \(page 195\)](#)

[Modify a profile with variable cross sections \(page 198\)](#)

[Create parametric profiles by sketching \(page 172\)](#)

Modify a profile with variable cross sections

1. On the **File** menu, click **Catalogs** --> **Profile catalog** to open the **Modify Profile Catalog** dialog box.
2. Open the **Others** branch at the end of the profile tree.
3. Right-click a profile with variable cross sections, and then select **Edit profile** to open the profile in the **Profile Editor**.

4. Modify the profile properties.
5. Click **Save**.

See also

[Create a profile with variable cross sections \(page 196\)](#)

Define standardized values for parametric profiles

You can define standardized values for the dimensions of parametric profiles. The standardized values are visible in the profile catalog where you can select suitable dimension values for the profiles.

1. Go to the `..\ProgramData\Tekla Structures\<version>\environments\<environment>\system` folder.
2. Open the `industry_standard_profiles.inp` file using any standard text editor, for example, Microsoft Notepad.

3. Modify the file.

The file has the following format:

- profile and profile subtype
- parameters separated by spaces
- units for each parameter
- standardized values for each parameter.

Each dimension combination has its own row.

4. Save the file.

Example

For example, the standardized combinations of dimension values for a C profile are as follows:

C	h*b*t	
h	b	t
mm	mm	mm
75	35	5
75	35	6
75	35	7
100	40	7
100	40	8
100	40	9

Create an image of a profile

To illustrate the shape and dimensions of a profile you have created, you can create an image of it. Tekla Structures displays the image when you browse for profiles in the profile catalog. The image must be in Windows bitmap (.bmp) format and can be created with any bitmap editor, for example Microsoft Paint.

1. Take a screenshot of the profile you have drawn or sketched.

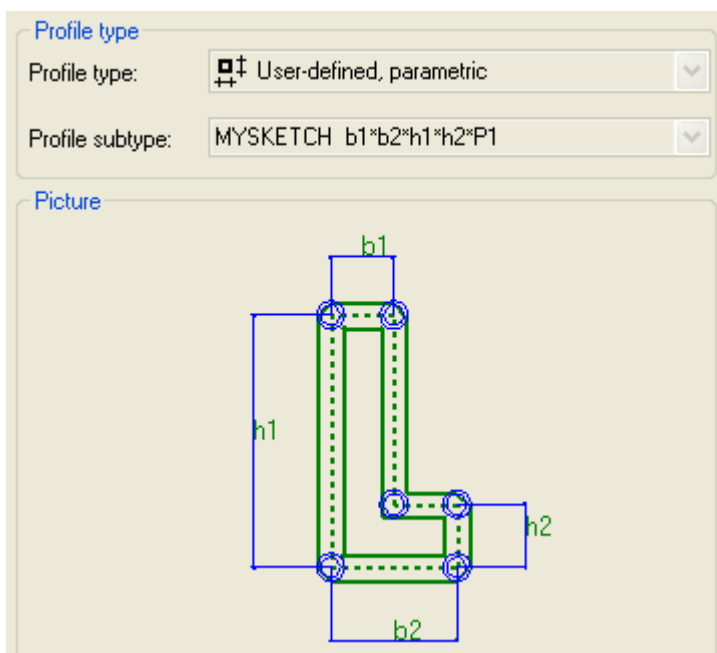
For example, press the **Print Screen (Prt Scr)** key to take a screenshot of your entire desktop. To take a screenshot of an active window, press **Alt +Print Screen**. The screenshot is placed on the clipboard.

2. Open the screenshot in any bitmap editor (for example, Microsoft Paint) and modify the image if necessary.
3. Save the image in .bmp format in the `..\ProgramData\Tekla Structures\<version>\Bitmaps` folder.

The file name must match the actual profile name. For example, if the profile name is `mysketch`, the image must be named `mysketch.bmp`.

4. Restart Tekla Structures.

The image is now shown in the profile catalog.



4.8 Customize the shape catalog

The **Shape Catalog** dialog box contains information on shapes. It is used for viewing shape properties, and for importing and exporting shapes.

The shapes you download from Tekla Warehouse are also displayed in the **Shape Catalog** dialog box.

The catalog includes two default shapes: **Default** and **Concrete_Default**. Shapes are used in defining items. In Tekla Structures, items are similar to other parts, such as beams and columns. The main difference between items and other types of parts is that a 3D shape defines the geometry of an item, whereas a part has a 2D profile that is extruded to create the length of the part.

The shapes you import to the shape catalog are stored in the current model folder. There are two files for each shape: one .xml file stored in the \Shapes folder and one .tez or .xml file in the \ShapeGeometries folder.

If you have shapes that you would like to have available in the **Shape Catalog** dialog box for all new models that are created in your project or company, copy the corresponding .tez and .xml files to the correct subfolders (\Shapes and \ShapeGeometries) in the \profil folder under your project or firm folder.

NOTE If your project, company, or environment uses a common location for shapes that are used in several Tekla Structures versions including 2017i and older, use .xml format for shape geometry files. The compressed .tez files do not work in Tekla Structures 2017i or older versions.

See also

[Import a shape \(page 201\)](#)

[Compress shape geometry files \(page 202\)](#)

[Export a shape \(page 203\)](#)

[Delete a shape \(page 204\)](#)

Import a shape

You can import the following types of shape files: dgn, tsc, skp, dxf, dwg, ifc, ifcZIP, ifcXML, igs, iges, stp, and step.

When using other modeling software to model shapes that you want to import into Tekla Structures, we recommend that you center parts around the origin and direct the parts along the x axis.

1. On the **File** menu, click **Catalogs --> Shape catalog**.

The **Shape Catalog** dialog box opens.

2. Click **Import**.

3. Select the shape file to import.

To select multiple shape files, hold down **Ctrl** or **Shift**.

4. Click **OK**.

Importing a large file can take several minutes.

Shape import has three possible results:

- Tekla Structures imports the shape as a watertight solid shape. All solid operations are available.
- Tekla Structures imports the shape as a non-solid shape. A non-solid shape means that the object may not be watertight. For example, it has holes, or is missing a face or an edge.
- Import fails. This can happen, for example, if the shape is very complex or has no volume. There may also be a tolerance difference between Tekla Structures and the original software that was used to create the shape. To find out why the import failed, check the session history log by clicking **File menu --> Logs --> Session history log**.

When you import a shape into the **Shape Catalog**, Tekla Structures creates two files: one `.xml` file for shape attributes, such as name and GUID, and one `.tez` file for geometric properties, such as coordinates. The files are saved in the current model folder under the `\Shapes` and `\ShapeGeometries` subfolders.

TIP You can also download shapes from Tekla Warehouse.

See also

[Example: Import a shape from SketchUp Pro \(page 204\)](#)

[Compress shape geometry files \(page 202\)](#)

[Export a shape \(page 203\)](#)

[Delete a shape \(page 204\)](#)

[Customize the shape catalog \(page 200\)](#)

Compress shape geometry files

You can compress shape geometry files by converting the files from `.xml` format to compressed format `.tez`. Using the `.tez` format saves disk space.

You can compress the shape geometry files that are stored in the `\ShapeGeometries` subfolder in the current model folder. The files in the `\Shapes` subfolder will not be compressed.

If you have already used any of the shapes for items in the model, they will work the same way even after compression.


NOTE Compression is a permanent action, and you cannot undo it even if you do not save the model.

Do not compress shape geometry files if you need them in models that you will open using Tekla Structures 2017i or an older version. The .tez files do not work in those versions.

If your project, company, or environment uses a common location for shapes that are used in several Tekla Structures versions including 2017i and older, do not convert those shape geometry files to .tez format. Otherwise the shapes will not work in all versions.

How to compress shape geometry files

To compress existing shape geometry files, either [re-import the original shape files \(page 201\)](#), or use the **Compress shape geometries** application as follows:

1. Open the model whose shape geometry files you want to compress.
2. Click the **Applications & components** button  in the side pane to open the **Applications & components** catalog.
3. Search for the **Compress shape geometries** application, and then double-click to open it.
4. In the **Compress shape XML files to TEZ format** dialog box, click **Compress**.
5. Re-open the model.

Export a shape

1. On the **File** menu, click **Catalogs --> Shape catalog**.
The **Shape Catalog** dialog box opens.
2. Select the shape to export.
To select multiple shapes, hold down **Ctrl** or **Shift**.
3. Click **Export**.
4. If you are exporting only one shape, select the folder where you want to export the shape, and enter a name for the export file in the **Selection** box.
5. If you are exporting multiple shapes, select the folder where you want to export the shapes.
Tekla Structures will create a separate export file for each shape using the shape name as the file name.

6. Click **OK**.

The shapes are saved in the destination folder as `.tsc` files.

TIP You can also upload shapes to Tekla Warehouse.

See also

[Import a shape \(page 201\)](#)

[Delete a shape \(page 204\)](#)

[Customize the shape catalog \(page 200\)](#)

Delete a shape

Before you start, ensure that the shape you want to delete is not used in your Tekla Structures model. When you delete a shape from the **Shape Catalog**, the shape is no longer available anywhere in the model. If a model includes a deleted shape, it is only shown as a straight line between its original reference points.

1. On the **File** menu, click **Catalogs --> Shape catalog**.
The **Shape Catalog** dialog box opens.
2. Right-click the name of the shape.
3. Click **Delete**.

Tekla Structures deletes the shape.

See also

[Import a shape \(page 201\)](#)

[Export a shape \(page 203\)](#)

[Customize the shape catalog \(page 200\)](#)

Example: Import a shape from SketchUp Pro

In this example, you import a solid 3D shape from Trimble SketchUp Pro to a Tekla Structures model.

1. Create an empty model in SketchUp Pro.
Delete any extra entities, such as the default person on the drawing area.
2. Create a group of entities.

Although Tekla Structures supports importing separate individual entities, we recommend you create a group of entities or a component in SketchUp.

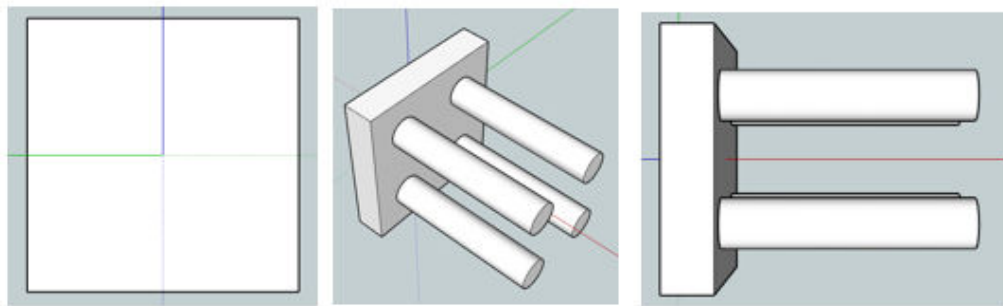
All SketchUp groups and components should form watertight solids. Select the group or component and open **Entity Info** to check that the selection is a solid. SketchUp solids have a volume. If there is no volume listed, the selection is not a solid.

3. Select the group and click **Solid Tools** --> **Union** to make the group of entities into a union of solids.

Your group becomes a single solid volume: a solid.

4. Place the solid in SketchUp so that it lies along the positive x axis (red), and halfway on both y (green) and z axes (blue). In Tekla Structures, the yellow and magenta part handles will align with the x axis used in SketchUp.

The location and rotation of the solid in SketchUp are important, since they determine how an item is inserted and positioned in Tekla Structures. Different positioning in SketchUp causes an offset in Tekla Structures.



5. Save the SketchUp file.
6. In your Tekla Structures model, open the **Shape Catalog** and click **Import**.
7. Select the SketchUp file.
8. Click **OK**.

Tekla Structures imports the shape to the **Shape Catalog** and you can use it to define the shape of an item or a concrete item.

See also

[Customize the shape catalog \(page 200\)](#)

[Import a shape \(page 201\)](#)

4.9 Customize the bolt catalog

The individual *bolt assembly elements*, such as bolts of different sizes and lengths, nuts and washers, are listed in the bolt catalog. Each *bolt assembly* then consists of these bolt assembly elements. You cannot use a bolt if it does not belong to a bolt assembly. The bolt assemblies are listed in the bolt assembly catalog.

Tekla Structures stores the bolt catalog information in the `screwdb.db` file and the bolt assembly catalog information in the `assdb.db` file.

See also

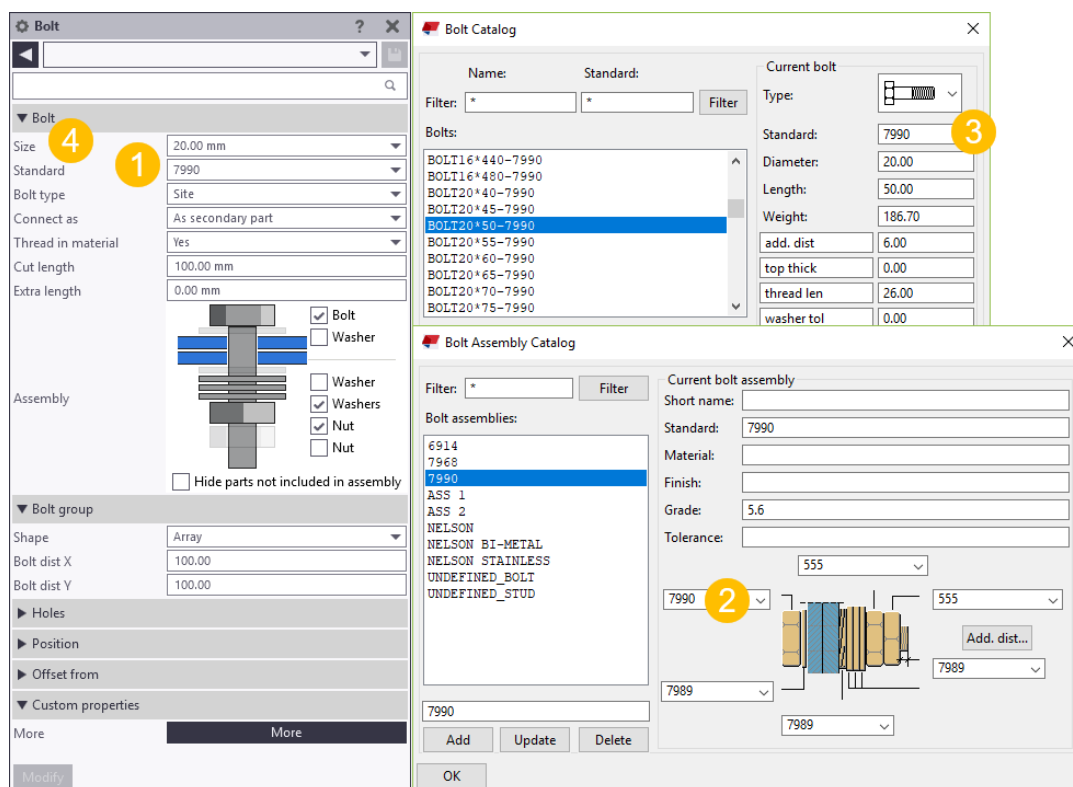
How the bolt catalog and bolt assembly catalogs work together (page 206)

[Manage bolts and bolt assemblies \(page 207\)](#)

Import and export bolts and bolt assemblies (page 212)

Bolt length calculation (page 216)

How the bolt catalog and bolt assembly catalogs work together



(1) The **Bolt standard** options are read from the bolt assembly catalog.

(2) The bolt assembly catalog defines which bolt standard is used in the bolt assembly.

(3) The bolt catalog contains the different bolt diameters, lengths, and other properties used in the bolt standard.

(4) The **Bolt size** options are read from the bolt catalog depending on the selected **Bolt standard** option.

See also

[Customize the bolt catalog \(page 205\)](#)

[Bolt catalog properties \(page 220\)](#)

[Bolt assembly catalog properties \(page 221\)](#)

Manage bolts and bolt assemblies

This section describes how to manage bolts and bolt assemblies using the bolt catalog and the bolt assembly catalog. You can add, modify, and delete bolts and bolt assemblies.

Click the links below to find out more:

[Add a bolt to the catalog \(page 207\)](#)

[Add a stud bolt to the catalog \(page 208\)](#)

[Modify bolt information in the catalog \(page 209\)](#)

[Delete a bolt from the catalog \(page 210\)](#)

[Add a bolt assembly to the catalog \(page 210\)](#)

[Modify bolt assembly information in the catalog \(page 211\)](#)

[Delete a bolt assembly from the catalog \(page 211\)](#)

Add a bolt to the catalog

You need to add individual bolt elements, such as bolts, nuts, and washers, to the bolt catalog before you can define bolt assemblies and use them in a model.

The following steps are for adding bolts, but they also apply to adding nuts and washers.

1. On the **File** menu, click **Catalogs --> Bolt catalog** to open the **Bolt Catalog** dialog box.
2. Enter the name of the bolt in the following box:



You can enter a maximum of 40 characters in the name box.

3. In the **Type** list, select an option to define the bolt element type.
4. Define the other properties of the new bolt.

You can enter a maximum of 25 characters in the **Standard** box.

Use different names for bolt, nut, washer, and stud standards to distinguish bolt element types from each other when defining bolt assemblies.

5. Click **Add** to add the bolt to the bolt catalog.

You cannot use a bolt if it does not belong to a bolt assembly. Therefore, we recommend checking that the catalog also includes nuts and washers that work with the new bolt so that you can create a bolt assembly. If the catalog does not include suitable nuts and washers, add them the same way as you added the new bolt.

6. Click **OK**.

The **Save confirmation** dialog box appears.

7. Select **Save changes to model folder** to save the changes in the `screwdb.db` file in the current model folder, and then click **OK**.

TIP You can also add bolts by importing them to the bolt catalog.

See also

[Import bolts to the catalog \(page 212\)](#)

[Add a stud bolt to the catalog \(page 208\)](#)

[Modify bolt information in the catalog \(page 209\)](#)

[Delete a bolt from the catalog \(page 210\)](#)

[Bolt length calculation \(page 216\)](#)

[Bolt catalog properties \(page 220\)](#)

[Add a bolt assembly to the catalog \(page 210\)](#)

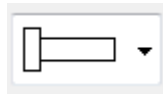
Add a stud bolt to the catalog

A stud is special type of bolt that is welded to steel parts to transfer loads between steel and concrete. You cannot use studs unless you have defined a stud assembly that contains the assembly's name and material.

1. On the **File** menu, click **Catalogs --> Bolt catalog** to open the **Bolt Catalog** dialog box.

2. Enter values for the following properties:

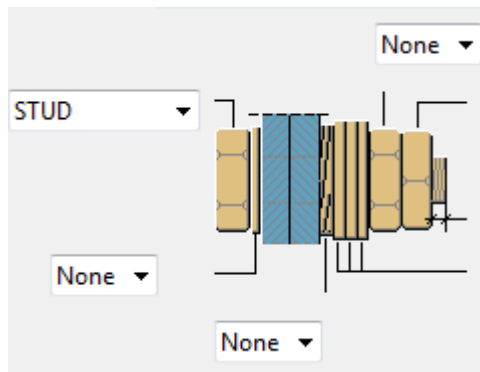
- **Name:** Name for the stud bolt.



- **Type:**
- **Standard:** This name is needed when creating a bolt assembly for the stud.
- **Diameter:** Shank diameter.
- **Length:** Stud length.
- **Weight:** Stud weight.
- **top thick:** Head thickness.
- **top diameter:** Head diameter.

The units depend on the settings in **File menu --> Settings --> Options --> Units and decimals**.

3. On the **File** menu, click **Catalogs --> Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
4. Select the standard for the stud bolt.
5. Set all the other bolt assembly elements to **None**.



6. To create studs in the model, create bolts and select the stud assembly standard.

See also

[Bolt catalog properties \(page 220\)](#)

Modify bolt information in the catalog

1. On the **File** menu, click **Catalogs --> Bolt catalog** to open the **Bolt Catalog** dialog box.
2. Select a bolt from the list.

3. Modify the properties.
4. Click **Update**.
5. Click **OK**.

The **Save confirmation** dialog box appears.

6. Select **Save changes to model folder** to save the changes in the `screddb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt to the catalog \(page 207\)](#)

[Delete a bolt from the catalog \(page 210\)](#)

[Bolt catalog properties \(page 220\)](#)

Delete a bolt from the catalog

1. On the **File** menu, click **Catalogs** --> **Bolt catalog** to open the **Bolt Catalog** dialog box.
2. Select a bolt from the list.
Use the **Shift** and **Ctrl** keys to select multiple bolts.
3. Click **Delete**.
4. Click **OK**.
The **Save confirmation** dialog box appears.
5. Select **Save changes to model folder** to save the changes in the `screddb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt to the catalog \(page 207\)](#)

[Modify bolt information in the catalog \(page 209\)](#)

Add a bolt assembly to the catalog

You can add new bolt assemblies to the bolt assembly catalog. Note that the bolt assembly can contain only bolts or studs, not both of them.

1. On the **File** menu, click **Catalogs** --> **Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
2. Enter the name of the bolt assembly in the following box:



The image shows a dialog box with a text input field at the top. Below the input field are three buttons: "Add", "Update", and "Delete". The "Add" button is highlighted with a mouse cursor.

3. Define the other properties of the new bolt assembly.
You can enter a maximum of 30 characters in the **Standard** box. For all the other properties, you can enter a maximum of 25 characters.
4. Click **Add** to add the bolt assembly to the catalog.
5. Click **OK**.
The **Save confirmation** dialog box appears.
6. Select **Save changes to model folder** to save the changes in the `assdb.db` file in the current model folder, and then click **OK**.

See also

[Import bolt assemblies to the catalog \(page 214\)](#)

[Modify bolt assembly information in the catalog \(page 211\)](#)

[Delete a bolt assembly from the catalog \(page 211\)](#)

[Bolt assembly catalog properties \(page 221\)](#)

Modify bolt assembly information in the catalog

1. On the **File** menu, click **Catalogs** --> **Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
2. Select a bolt assembly from the list.
3. Modify the properties.
4. Click **Update**.
5. Click **OK**.
The **Save confirmation** dialog box appears.
6. Select **Save changes to model folder** to save the changes in the `assdb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt assembly to the catalog \(page 210\)](#)

[Delete a bolt assembly from the catalog \(page 211\)](#)

Delete a bolt assembly from the catalog

1. On the **File** menu, click **Catalogs** --> **Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
2. Select a bolt assembly from the list.
3. Click **Delete**.

4. Click **OK**.

The **Save confirmation** dialog box appears.

5. Select **Save changes to model folder** to save the changes in the `assdb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt assembly to the catalog \(page 210\)](#)

[Modify bolt assembly information in the catalog \(page 211\)](#)

Import and export bolts and bolt assemblies

Use importing and exporting for merging bolts and bolt assemblies across catalogs. Bolts are imported and exported as `.bolts` files, bolt assemblies as `.bass` files, and bolt catalogs as `.lis` files.

When you export single bolts or bolt assemblies, you can select the bolts or bolt assemblies you want to include in the `.bolts` or `.bass` file. When you import and export bolt assemblies, also the related bolts are included in the `.bass` file.

You can import and export an entire bolt catalog. You can also import a part of an exported bolt catalog.

Importing and exporting bolt catalogs is useful, when you:

- Upgrade to newer version of Tekla Structures and you want to use a customized bolt catalog from a previous version.
- Want to combine bolt catalogs that are stored in different locations.
- Want to share bolt catalog information with other users.

TIP You can also download or share bolt assemblies using Tekla Warehouse.

See also

[Import bolts to the catalog \(page 212\)](#)

[Export bolts from the catalog \(page 213\)](#)

[Import bolt assemblies to the catalog \(page 214\)](#)

[Export bolt assemblies from the catalog \(page 214\)](#)

[Import a bolt catalog \(page 215\)](#)

[Import a part of the bolt catalog \(page 215\)](#)

[Export an entire bolt catalog \(page 216\)](#)

Import bolts to the catalog

Bolts are imported and exported as `.bolts` files. A `.bolts` file can include one bolt or several bolts.

1. On the **File** menu, click **Catalogs --> Bolt catalog** to open the **Bolt Catalog** dialog box.
2. Right-click in the **Bolts** list and select **Import**.
3. Select the import file.
4. Click **OK**.

The bolts are displayed on the **Bolts** list by their original names.

5. Click **OK**.

The **Save confirmation** dialog box appears.

6. Select **Save changes to model folder** to save the changes in the `screwdb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt to the catalog \(page 207\)](#)

[Import a bolt catalog \(page 215\)](#)

[Import a part of the bolt catalog \(page 215\)](#)

[Import bolt assemblies to the catalog \(page 214\)](#)

[Export bolts from the catalog \(page 213\)](#)

Export bolts from the catalog

Bolts are imported and exported as `.bolts` files. A `.bolts` file can include one bolt or several bolts.

1. On the **File** menu, click **Catalogs --> Bolt catalog** to open the **Bolt Catalog** dialog box.
2. Select bolts from the **Bolts** list.
Use the **Shift** and **Ctrl** keys to select multiple bolts.
3. Right-click in the **Bolts** list and select **Export**.
4. Browse for the folder where you want to save the export file.
5. Enter a name for the file in the **Selection** box.
6. Click **OK**.

See also

[Export bolt assemblies from the catalog \(page 214\)](#)

[Export an entire bolt catalog \(page 216\)](#)

[Import bolts to the catalog \(page 212\)](#)

Import bolt assemblies to the catalog

Bolt assemblies are imported and exported as `.bass` files. A `.bass` file can include one bolt assembly or several bolt assemblies.

1. On the **File** menu, click **Catalogs --> Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
2. Right-click in the **Bolt assemblies** list and select **Import**.
3. Select the import file.
4. Click **OK**.

The bolt assemblies are displayed on the **Bolt assemblies** list by their original names.

5. Click **OK**.

The **Save confirmation** dialog box appears.

6. Select **Save changes to model folder** to save the changes in the `assdb.db` file in the current model folder, and then click **OK**.

See also

[Add a bolt assembly to the catalog \(page 210\)](#)

[Import a bolt catalog \(page 215\)](#)

[Import bolts to the catalog \(page 212\)](#)

[Export bolt assemblies from the catalog \(page 214\)](#)

Export bolt assemblies from the catalog

Bolt assemblies are imported and exported as `.bass` files. A `.bass` file can include one bolt assembly or several bolt assemblies.

1. On the **File** menu, click **Catalogs --> Bolt assembly catalog** to open the **Bolt Assembly Catalog** dialog box.
2. Select bolt assemblies from the **Bolt assemblies** list.
Use the **Shift** and **Ctrl** keys to select multiple bolt assemblies.
3. Right-click in the **Bolt assemblies** list and select **Export**.
4. Browse for the folder where you want to save the export file.
5. Enter a name for the file in the **Selection** box.
6. Click **OK**.

See also

[Export an entire bolt catalog \(page 216\)](#)

[Export bolts from the catalog \(page 213\)](#)

[Import bolt assemblies to the catalog \(page 214\)](#)

Import a bolt catalog

Bolt catalogs are imported to Tekla Structures models as `.lis` files.

1. Open the model to which you want to import a bolt catalog.
2. Copy the `screwdb.lis` file that you want to import to the current model folder.
3. To import the bolt catalog file `screwdb.lis` from the current model folder, go to **Quick Launch**, start typing `import bolt catalog`, and select the **Import Bolt Catalog** command from the list that appears.

Tekla Structures does not replace the entries that have the same names as the entries in the import file.

4. Check the status bar for error messages.

To view errors, go to the **File** menu and click **Logs** --> **Session history log**.

See also

[Import a part of the bolt catalog \(page 215\)](#)

[Export an entire bolt catalog \(page 216\)](#)

Import a part of the bolt catalog

If you do not want to import the entire bolt catalog, you can select the parts to be imported.

TIP If you only want to import a few bolts or bolt assemblies, use the import and export commands of the corresponding catalogs.

1. Open the model that contains the bolt catalog you want to use.
2. Go to **Quick Launch**, start typing `export bolt catalog`, and select the **Export Bolt Catalog** command from the list that appears.

The bolt catalog is saved as the `screwdb.lis` file in the current model folder.

3. Open the `screwdb.lis` file using a text editor, for example, Microsoft Notepad.

Each entry is listed on a separate row.

4. Delete the unwanted rows from the file.

WARNING Do not delete the `STARTLIST` and `ENDLIST` rows.

5. Save the file with the name `screwdb.lis`.
6. Open the model to which you want to import the bolt catalog.
7. Copy the `screwdb.lis` file that you want to import to the current model folder.
8. To import the bolt catalog file `screwdb.lis` from the current model folder, go to **Quick Launch**, start typing `import bolt catalog`, and select the **Import Bolt Catalog** command from the list that appears.

See also

[Import bolts to the catalog \(page 212\)](#)

[Import bolt assemblies to the catalog \(page 214\)](#)

[Import a bolt catalog \(page 215\)](#)

[Export an entire bolt catalog \(page 216\)](#)

Export an entire bolt catalog

Bolt catalogs are exported from Tekla Structures models as `.lis` files.

1. Open the model that contains the bolt catalog you want to export.
2. Go to **Quick Launch**, start typing `export bolt catalog`, and select the **Export Bolt Catalog** command from the list that appears.

The exported bolt catalog is the `screwdb.lis` file in the current model folder.

TIP The **Export Bolt Catalog** command exports the entire bolt catalog. To export only part of the bolt catalog, modify the export file to contain only the required elements. You can also export bolts from the **Bolt Catalog** dialog box or bolt assemblies from the **Bolt Assembly Catalog** dialog box.

See also

[Export bolt assemblies from the catalog \(page 214\)](#)

[Export bolts from the catalog \(page 213\)](#)

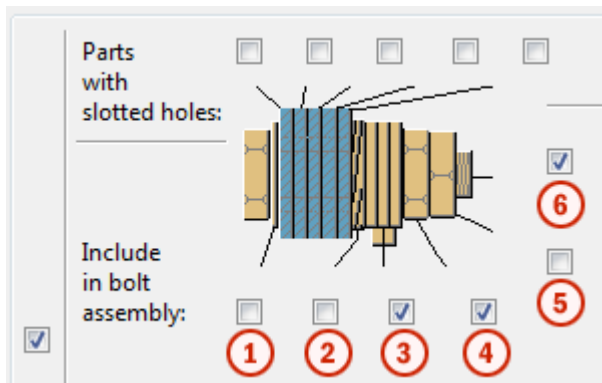
[Import a bolt catalog \(page 215\)](#)

[Import a part of the bolt catalog \(page 215\)](#)

Bolt length calculation

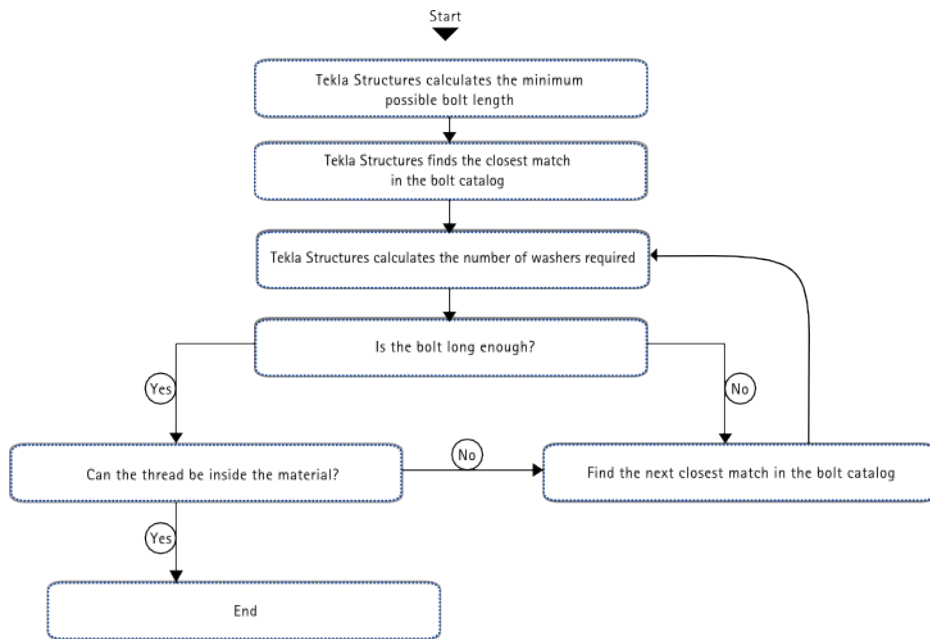
Tekla Structures uses values from the bolt catalog and the bolt assembly catalog when calculating the bolt length. If the bolt catalog does not contain long enough bolts for your purposes, you need to add them to the bolt catalog.

The following settings in the **Bolt Properties** dialog box affect the bolt length calculation process. If the check box is selected, the part is used in the bolt assembly.



- 1 Washer (1)
- 2 Washer (2)
- 3 Washer (3)
- 4 Nut (1)
- 5 Nut (2)
- 6 If the check box is clear, only a hole is created

The chart and the detailed steps below explain the process of bolt length calculation.



1. Tekla Structures calculates the **minimum possible length** of the bolt as follows:
 - washer (1) thickness (if the check box is selected) +
 - material thickness +
 - washer (2) thickness (if the check box is selected) +
 - washer (3) thickness (if the check box is selected) +
 - nut (1) thickness +
 - nut (2) thickness +
 - extra length
2. Tekla Structures searches for the **closest match** in the bolt catalog.
3. Tekla Structures calculates the **number of washers required** (must not exceed 10) so that the **length of the shaft is less than:**
 - nut (1) thickness +
 - material thickness +
 - nut (2) thickness +
 - washer (1) thickness +
 - washer (2) thickness +
 - (number of washers*washer (3) thickness)
4. Tekla Structures checks that the **bolt found in step 2 is longer than:**
 - extra length +
 - nut (1) thickness +

material thickness +
 nut (2) thickness +
 add. dist (from the bolt catalog) +
 washer (1) thickness +
 washer (2) thickness +
 (number of fitting washers * washer (3) thickness)

5. If the selected bolt does not fulfill the criteria in step 4, Tekla Structures returns to step 2, otherwise it continues on to step 6.
6. Tekla Structures checks that the selected bolt fulfills **all the following conditions**:
 - Can the thread be inside the material to be connected? Even if this is **not** allowed, the calculation always allows 3 or 4 mm of thread to be inside the material, depending on the bolt diameter. If the bolt diameter is ≥ 24 mm, it allows 4 mm, otherwise it allows 3 mm.
 - Shaft length must be more than:
 material thickness +
 extra length +
 washer (1) thickness (if checked) -
 maximum thread in material allowed (if thread in material = no) =
 3 mm or 4 mm
 - Shaft length is calculated as:
 Screw length - screw thread length - thread end.
 - Thread end is the part of the bolt between the shaft and the thread. It is calculated as follows:

Diameter of bolt (mm)	Thread end (mm)
>33.0	10.0
>27.0	8.0
>22.0	7.0
>16.0	6.0
>12.0	5.0
>7.0	4.0
>4.0	2.5
≤ 4	1.5

7. If the selected bolt does not fulfill **all** the above conditions, Tekla Structures returns to step 2 and tries the next longest bolt.

8. If the advanced option `XS_BOLT_LENGTH_EPSILON` is set, the epsilon thickness is added to, or subtracted from, the material thickness to avoid inaccurate bolt length calculation.

For example, if this value is not taken into account, and the calculated length is 38.001 mm, a 39 mm bolt might be selected.







See also

[How the bolt catalog and bolt assembly catalogs work together \(page 206\)](#)

[Add a bolt to the catalog \(page 207\)](#)

Bolt catalog properties

Use the **Bolt Catalog** dialog box to view and modify the properties of individual bolt elements, such as bolts, washers, and nuts. The units depend on the settings in **File menu --> Settings --> Options --> Units and decimals**.

Option	Description
Type	<p>The type of the bolt element. The options are:</p> <div>    (Nut)  (Washer)  (Stud)</div>
Standard	<p>The name of the bolt element standard.</p> <p>Used in the Bolt Assembly Catalog dialog box for defining bolt elements in a bolt assembly.</p> <p>Use different names for bolt, nut, washer, and stud standards to distinguish bolt element types from each other.</p>
Diameter	The diameter of the bolt element.
Length	The length of the bolt element.
Weight	The weight of the bolt element.

Option	Description
add. dist	The length of the part of the bolt that protrudes from the nut. The value is used in bolt length calculation.
top thick	The thickness of the bolt head.
thread len	The length of the threaded part of the bolt shaft. The value is not used in bolt length calculation (value is 0) if the bolt is fully-threaded.
washer tol	The tolerance between the washer inner diameter and the bolt diameter. The value is used when searching for the correct-sized washer for the bolt. Not used in bolt length calculation.
span size	The size of the wrench needed.
calc thick	The calculation thickness of a nut or a washer. This value is used in bolt length calculation.
real thick	The true thickness of a nut or a washer. This is for information only.
inner diam	The inner diameter of a nut or a washer. This is for information only.
outer diam	The outer diameter of a nut or a washer. This is for information only.
top diam	The diameter of the hexagon. This is for information only.

See also

[Add a bolt to the catalog \(page 207\)](#)

[How the bolt catalog and bolt assembly catalogs work together \(page 206\)](#)

Bolt assembly catalog properties

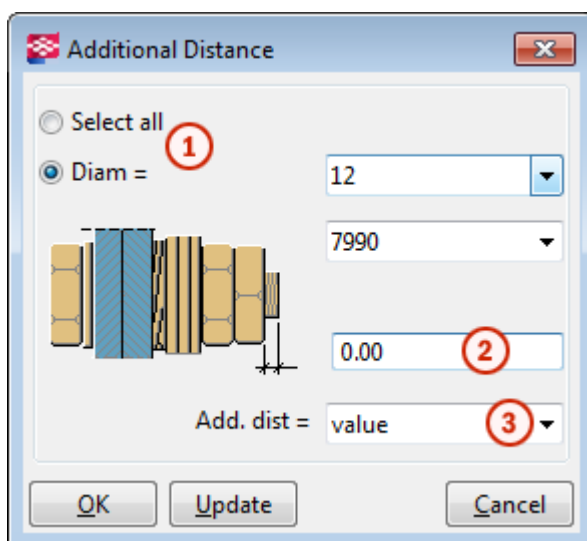
Use the **Bolt Assembly Catalog** dialog box to view and modify the properties of bolt assemblies. The units depend on the settings in **File menu --> Settings --> Options --> Units and decimals**.

Option	Description
Short name	This name is used in drawings and reports. It is usually the commercial name for a specific bolt.

Option	Description
Standard	This name is the full name which is shown in the bolt assemblies list in the Bolt Assembly Catalog dialog box, and in the Bolt standard list in the Bolt Properties dialog box. The value is used in bolt length calculation.
Material	The material of the bolt assembly.
Finish	The type of the finish.
Grade	The grade of the bolt assembly.
Tolerance	The tolerances of the bolt assembly.

Additional length for bolt calculation

Option	Description
Add. dist...	The Additional Distance option controls how much of the bolt protrudes from the nut. Additional Distance updates the Additional Distance values of all bolts that use the selected bolt standard and have the selected diameter. The value is used in bolt length calculation.



- ① Select whether the value of the additional length affects all or individual diameters of one bolt assembly.
- ② Enter the additional length value.
- ③ Select whether the value is absolute or relative to the diameter.

See also

[Add a bolt assembly to the catalog \(page 210\)](#)

5

Files and folders in Tekla Structures

Sometimes you need to know where Tekla Structures stores information, and the types of files that Tekla Structures contains, where the files are located, and how the files should be should be used.

Tekla Structures contains a large amount of files that affect the way the software works. It is important to know which file controls which functionality, and also which files we do not recommend that you touch.

The initialization file reading order is also very important. You need to know the order in which the files are read when you open Tekla Structures, so that you do not modify the files unnecessarily.

See also

[Initialization files \(.ini files\) \(page 226\)](#)

[Input files \(.inp files\) \(page 256\)](#)

[File storing options and advanced options \(page 234\)](#)

[Data files \(.dat files\) \(page 269\)](#)

[Message files \(page 270\)](#)

[Standard files \(page 271\)](#)

[Property files \(page 273\)](#)

[Catalog files \(page 273\)](#)

[Font files and font conversion files \(page 275\)](#)

[Symbol files \(page 276\)](#)

[Image files \(page 277\)](#)

[Files related to templates, reports and drawings \(page 276\)](#)

[Log files \(page 278\)](#)

[Model folder files and file name extensions \(page 284\)](#)

[Check and change Tekla Structures file and folder locations in Directory browser \(page 306\)](#)

[Folder search order \(page 307\)](#)

[Create project and firm folders \(page 225\)](#)

[Location of certain files in hidden folders \(page 309\)](#)

5.1 Create project and firm folders

Use project and firm folders for customized files. These can be custom ribbons, drawing styles, profile and material catalogs, or any other settings you want to store for future use. You can use the same files each time you start a new model or install a new version of Tekla Structures. This also means you can easily revert back to the default settings, because you have not overwritten any of the system files.

Use the **project folder** for customized files that are only used in a particular project. A project may consist of several models done by separate teams, all spread out in different locations. You can save project-specific files and settings in the project folder, so that everyone in the project can use them. Project may also consist of one model that is shared by different companies.

Use the **firm folder** to store customized files for the entire organization or company. These settings and files are meant to be used in all projects within the company. For example, let's say you regularly work for a company that has specific drawing layout standards it expects you to use. Customize the drawing templates once for the company and save them in a sub-folder located under the firm folder. You can then use the customized drawing templates for all future projects for that company.

When working within one company, the firm and project folders are usually located in network folders so that everyone can access them. They are defined by `XS_FIRM` and `XS_PROJECT`. When working in a model sharing project, each company needs to have its own firm settings in a folder defined by `XS_FIRM`, and a common project folder for project settings defined by `XS_PROJECT`. It may be useful to create a [startup shortcut \(page 21\)](#) on your desktop for each project containing all necessary folders.

WARNING Changing an advanced option value in `.ini` files located outside the model folder does not affect the existing models. You can only update advanced options in the **Advanced Options** dialog box or in the `options.ini` file located in model folder; not from an `options.ini` file located in folders defined for the advanced options `XS_FIRM` or `XS_PROJECT`. The `.ini` files are read also when you open an existing model, but only new advanced options that do not exist in `options_model.db` or `options_drawings.db` are inserted, for example, such options that are not yet in the **Advanced Options** dialog box but have been added in the software.

Create a project or firm folder

1. Create an empty folder in a shared location, for example on a network drive.
2. Name the folder appropriately.
3. In Tekla Structures, go to the **File** menu and click **Settings --> Advanced options**.
4. In the **File Locations** category, define the path to the firm or project folder you created in step 1 for the advanced option `XS_FIRM` or `XS_PROJECT`.
5. Restart Tekla Structures for the change to take effect.

See also

[Folder search order \(page 307\)](#)

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

5.2 Initialization files (.ini files)

Initialization files are used for defining Tekla Structures start-up parameters and default settings. They contain advanced options that are used for configuring Tekla Structures for different standards, and for your or your company's style of working.

Tekla Structures automatically creates the necessary [initialization files \(page 226\)](#) during installation. The number of initialization files it creates depends on how many Tekla Structures environments you have installed.

See also

[Global default environment settings - env_global_default.ini \(page 231\)](#)

[Local environment settings - env_<environment>.ini \(page 232\)](#)

[Role settings - role_<role>.ini \(page 232\)](#)

Typical initialization files (.ini files) and their reading order

Below is a list of all the typical initialization files that are read when Tekla Structures is started. The numbers indicate their reading order at startup. If

there are conflicting settings, the ones read later override the ones read earlier.

WARNING Changing an advanced option value in `.ini` files located outside the model folder does not affect the existing models. You can only update advanced options in the **Advanced Options** dialog box or in the `options.ini` file located in model folder; not from an `options.ini` file located in folders defined for the advanced options XS_FIRM or XS_PROJECT. The `.ini` files are read also when you open an existing model, but only new advanced options that do not exist in `options_model.db` or `options_drawings.db` are inserted, for example, such options that are not yet in the **Advanced Options** dialog box but have been added in the software.

To check the files that have been read and their reading order, go to **File menu --> Logs --> Session history log**.

File and reading order	Description
1. fonts_<lang>.ini	<p>This file is optional, and it is only needed for languages using special characters. One example is the <code>fonts_jpn.ini</code> file for the Japanese language.</p> <p>This file is read from <code>Tekla Structures\<version>\nt\bin\</code> if it is available. It is installed to the <code>.. \nt\bin</code> folder when Tekla Structures is installed.</p> <p>NOTE: Do not change these settings.</p>
2. teklastructures.ini	<p>The file <code>teklastructures.ini</code> starts Tekla Structures. It is read from <code>..\Program Files\Tekla Structures\<version>\nt\bin\</code>.</p> <p>This file contains basic system settings, such as the location of software and environment files. This file is installed to the <code>.. \nt\bin</code> folder when Tekla Structures is installed. It is always read at Tekla Structures startup.</p> <p>NOTE: Do not change these settings.</p>
3. lang_<lang>.ini	<p>This file contains the language settings. It is read from <code>..\Program</code></p>

File and reading order	Description
	<p>Files\Tekla Structures \<version>\nt\bin\.</p> <p>This file is installed to the ..\nt\bin folder when Tekla Structures is installed.</p> <p>Which lang_<lang>.ini files exist in the ..\nt\bin folder depends on which languages you have selected to install during the software installation.</p> <p>The language that is read depends on the language you have selected in File menu --> Settings --> Change language in the previous Tekla Structures session.</p> <p>NOTE: Do not change these settings.</p>
4. env_global_default.ini	<p>This file is used as a default for all environments and contains the global settings. The settings in the env_global_default.ini file provide the basics for all environment settings globally. The settings in this file can be localized and specified differently in an environment-specific initialization file that is read later than this file.</p> <p>This file is always read at Tekla Structures startup from ..\ProgramData\Tekla Structures\<version>\environments\common\ and is installed there from the common environment installation package.</p> <p>NOTE: Do not change these settings.</p>
5. All .ini files defined in shortcut/command line with -I <name>.ini	Usually none.
6. env_<environment>.ini	<p>The env_<environment>.ini files contain all the advanced options that have environment-specific settings. They are read from ..\ProgramData</p>

File and reading order	Description
	<p>\Tekla Structures\<version>\environments\<environment>\.</p> <p>The env_<environment>.ini files that exist on your computer depends on which environment packages you have installed. Which env_<environment>.ini file is read depends on the environment that you select in the Tekla Structures startup dialog box.</p> <p>For example, this file defines that the US imperial environment uses imperial units, shows the fractions correctly, and understands input as imperial. In metric environments metric units are used.</p> <p>NOTE: Do not change these settings.</p>
7. role_<role>.ini	<p>The role_<role>.ini files contain all the advanced options that have typical role-specific settings. They are read from ..\ProgramData\Tekla Structures\<version>\environments\<environment>\.</p> <p>The available roles depend on the environments you have installed.</p> <p>You can select the role in the Tekla Structures startup dialog box.</p> <p>NOTE: Do not change these settings.</p>
8. All .ini files defined in shortcut/command line with -i <name>.ini	Usually none.
9. company.ini	<p>The company.ini file is useful especially for big companies that want to unify certain enterprise-level settings. This file is read from a folder specified with the advanced option XS_COMPANY_SETTINGS_DIRECTORY. This file is read only if the advanced option XS_COMPANY_SETTINGS_DIRECTORY is set.</p> <p>This file is created by the system administrator when necessary, it is not created by the installation.</p>

File and reading order	Description
10. <code>user.ini</code>	<p>The <code>user.ini</code> file is where you can save your personal user settings.</p> <p>This file is located in the same location as the user-specific <code>options.bin</code> file, for example, <code>C:\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings</code>.</p> <p>The <code>user.ini</code> is created in the above mentioned location when you start Tekla Structures for the first time and create and save a model using the current version. It is read when you start Tekla Structures.</p> <p>The changes you make in the advanced options in the Advanced Options dialog box override the settings in all other initialization files, if the advanced option exists in both locations.</p> <p>If <code>user.ini</code> has system options they are read always when Tekla Structures is opened.</p> <p>If <code>user.ini</code> has model-specific options they are used when new model is created.</p> <p>If <code>user.ini</code> has user-specific options they are used when Tekla Structures is used for the first time.</p>
11. <code>options.ini</code> in system folder	The folder is specified with the advanced option <code>XS_SYSTEM</code> .
12. <code>options.ini</code> , firm-specific, if any exist 13. <code>options.ini</code> , project-specific, if any exist	<p>The <code>option.ini</code> files containing firm- or project-specific model settings are saved in and read from user-defined locations specified with the advanced options <code>XS_FIRM</code> and <code>XS_PROJECT</code>. They work in the specified way for the firm in question, or for the specified project if the model has been set up to read settings from these locations, and if the user has manually moved the <code>options.ini</code> file to these locations.</p> <p>An <code>options.ini</code> is created in the</p>

File and reading order	Description
	<p>firm or project folder when you copy or move it there.</p> <p>Updating of model-specific and user-specific advanced options can only be done from the Advanced Options dialog box or <code>options.ini</code> located in model folder, not from the firm- or project-specific <code>options.ini</code> files.</p> <p>The <code>options.ini</code> in the firm or project folder is read when you start Tekla Structures or open the model.</p>
14. <code>options.ini</code> , model-specific	The <code>options.ini</code> in the model folder.

See also

[Create startup shortcuts with customized initializations \(page 21\)](#)

[Settings defined by advanced options \(page 253\)](#)

Global default environment settings - `env_global_default.ini`

The `env_global_default.ini` file defines the global defaults for advanced options. The file is read from `..\ProgramData\Tekla Structures\<version>\environments\common\`.

WARNING Do not modify the `env_global_default.ini` file. If you need to modify some environment settings, copy the needed advanced options from this file to your [user.ini \(page 232\)](#) file and modify the settings there, or modify the settings in the **Advanced Options** dialog box.

For advanced options that are set according to your local standards, see the environment settings file [env_<environment name>.ini \(page 232\)](#) and the role settings file [role_<role name>.ini \(page 232\)](#). The local files override the advanced options set in `env_global_default.ini`.

If the advanced option in the `env_global_default.ini` file is preceded by `rem`, the software defaults are used and shown as the value. The outdated advanced options are listed at the end of the file.

See also

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

Local environment settings - env_<environment>.ini

The env_<environment>.ini file contains advanced options that are set according to local standards and are different from the global defaults. The file is read from ..\ProgramData\Tekla Structures\<version>\environments\<environment>\.

WARNING Do not modify the env_<environment>.ini file. If you need to modify some settings, copy the needed advanced options from this file to your [user.ini \(page 232\)](#) file and modify the settings there, or modify the settings in the **Advanced Options** dialog box.

The global default environment settings file [env_global_default.ini \(page 231\)](#) contains a complete listing of advanced options. The local files override the advanced options set in env_global_default.ini.

See also

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

Role settings - role_<role>.ini

The role_<role>.ini files contain all the advanced options that have typical role-specific settings. The file is read from ..\ProgramData\Tekla Structures\<version>\environments\<environment>\.

WARNING Do not modify the role_<role>.ini file. If you need to modify some settings, copy the needed advanced options from this file to your [user.ini \(page 232\)](#) file and modify the settings there, or modify the settings in the **Advanced Options** dialog box.

The role_<role>.ini file contains advanced options that are set according to typical role requirements in your local area. These settings are different from your environment settings in [env_<environment name>.ini \(page 232\)](#). The global default environment settings file [env_global_default.ini \(page 231\)](#) contains a complete listing of advanced options. The advanced option settings in role_<role>.ini override the ones in env_<environment>.ini

See also

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

Add an advanced option to the user.ini file

You can save your personal user settings to the `user.ini` file. The `user.ini` file is located in the same location as the user-specific `options.bin` file, for example, `..\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings`.

NOTE We recommend that you add only [system-specific \(page 253\)](#) advanced options to the `user.ini` file. You can also add [model-specific \(page 253\)](#) advanced options, but the model-specific advanced options only affect new models that you create. Adding user-specific advanced options in `user.ini` may not work as desired as `options.bin` is loaded after `user.ini` and may override the value.

1. Right-click the `user.ini` file in Windows Explorer and select **Open with**. Select a standard text editor from the list of available programs.
2. On a new line, enter `set`, then a space, then the name of the advanced option followed by an equal sign, and then the value in a single line.
Tekla Structures only reads lines in the initialization file that start with `set`.
3. Save `user.ini`.
4. Restart Tekla Structures for the changes to take effect.

Possible values	Example
TRUE FALSE	<code>set XS_DISABLE_WELD_PREP_SOLID=TRUE</code> <code>set XS_UNDERLINE_AFTER_POSITION_NUMBER_IN_HARDSTAMP=FALSE</code>
1	<code>set XS_SINGLE_CLOSE_DIMENSIONS=1</code>
0	<code>set XS_SINGLE_USE_WORKING_POINTS=0</code>
string value	<code>set XS_USER_DEFINED_BOLT_SYMBOL_TABLE=bolt_symbol_table.txt</code>
switches	<code>set XS_ASSEMBLY_FAMILY_POSITION_NUMBER_FORMAT_STRING=%%TPL:PROJECT.NUMBER%%</code> Use two switches.

TIP When you are moving to a new version of Tekla Structures, you can use the Migration Wizard to automatically copy your `user.ini` file to the new version. The Migration Wizard appears once you start Tekla Structures for the first time after installation.

See also

[Location of certain files in hidden folders \(page 309\)](#)

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

5.3 File storing options and advanced options

WARNING Changing an advanced option value in `.ini` files located outside the model folder does not affect the existing models. You can only update advanced options in the **Advanced Options** dialog box or in the `options.ini` file located in model folder; not from an `options.ini` file located in folders defined for the advanced options `XS_FIRM` or `XS_PROJECT`. The `.ini` files are read also when you open an existing model, but only new advanced options that do not exist in `options_model.db` or `options_drawings.db` are inserted, for example, such options that are not yet in the **Advanced Options** dialog box but have been added in the software.

What happens at model creation

When a new model is created, Tekla Structures reads model-specific option and advanced option values from the `standard.opt` file, and from the `.ini` files in a certain [reading order \(page 226\)](#), and creates the databases `options_model.db` and `options_drawings.db`, and the `options.ini` file under the model folder.

Changing a model-specific options or advanced options

- When you change a [model-specific \(page 253\)](#) option or advanced option and press **OK** or **Apply** in the **Options** or **Advanced Options** dialog box, the settings are taken into use (otherwise you will get a warning message).
- The updated model-specific option or advanced option settings are saved in `options_model.db` and `options_drawings.db` under model folder when the model is saved.
- In addition, there are also some special model-specific advanced options that can be updated from the `options.ini` file located in the model folder, for example, new advanced options that are not yet in the **Advanced Options** dialog box.
- You can change model-specific advanced options only in the **Advanced Options** dialog box or in the `options.ini` file that is located in model folder.
- You can change model-specific options only in the **Options** dialog box manually or by loading `standard.opt` file values in the dialog box.

Changing a user-specific options or advanced options

- When you change a [user-specific \(page 253\)](#) option or advanced option, and press **OK** or **Apply** in the **Options** or **Advanced Options** dialog box, the settings are saved in `options.bin` in `..\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings`.
- You can change user-specific advanced options only in the **Advanced Options** dialog box.
- You can change user-specific options only in the **Options** dialog box manually or by loading `standard.opt` file values in the dialog box.

Saving customized settings in the Options dialog box

- You can save your own model-specific settings in the Options dialog box by using the **Save** button. Then the `standard.opt` file is saved in the `\attributes` folder under the model folder.

Creating a list of advanced options and their values

- You can create a complete list of advanced options in a text file by clicking **Write to file** in the **Advanced Options** dialog box. The list shows the name of the advanced option, current value and type.

For more information about the `standard.opt` file, see [Standard.opt settings](#)

Settings in the Options dialog box

The **Options** dialog box (**File menu > Settings > Options**) contains the current values for a number of Tekla Structures settings.

Check the settings before you start modeling and change them, if necessary.

The [model-specific \(page 253\)](#) settings in this dialog box are saved in the `options_model.db` and `options_drawings.db` databases in the model folder, and the [user-specific \(page 253\)](#) settings in `options.bin` in your local `<user>` folder. Changing user- or model-specific options in the **Options** dialog box does not require Tekla Structures restart.

You can also save your own settings by using the **Save** button. Then the `standard.opt` file is saved in the `\attributes` folder under model folder. You may want to copy this file to your firm folder. When you create a model, the `standard.opt` is read from the firm folder.

The options in the **Options** dialog box are described below.


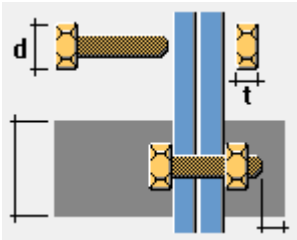
Clash check settings

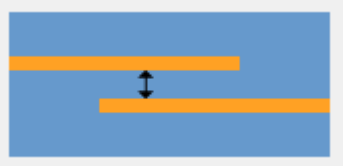
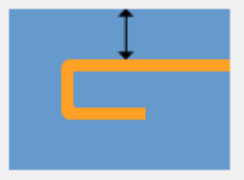
NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

Depending on how the objects selected for clash checking have been modeled, different clash check settings are used. For example, if you have modeled

embeds as studs, steel parts, or reinforcing bars, respectively either bolt settings, part settings, or reinforcement settings are relevant.

For more information about clash check, see Detect clashes.

Option	Description
Allowed penetration volume 	<p>Defines the allowed clash check tolerance if small collisions are acceptable and can be ignored.</p> <p>If the clashing volume is smaller than the given value, for example 1 mm³, then the clash is not reported.</p> <p>Enter the value in the current volume units.</p>
Clash check between bolt and bolted part	<p>Defines whether the model is checked for clashes that occur between bolts and the related bolted parts.</p> <p>If you select Yes, Tekla Structures will check the bolts against the real geometry of the bolted part profiles including roundings, and using the real bolt dimensions.</p>
Define the clash check clearance area for bolts 	<p>Use to check if bolts collide with parts and if there is enough space to fix the bolts.</p> <p>Enter the clearance dimensions in relation to the bolt head or nut diameter d (the larger value), and the nut thickness t. The clearance in front of the bolted parts is the same as the bolt length.</p> <p>If you do not enter a value, Tekla Structures uses the default value.</p> <p>If you clear the check boxes, the clearance will be zero.</p> <p>If Tekla Structures cannot find the bolt head or nut diameter in the bolt catalog, it uses the shank diameter instead.</p>
Reinforcing bar vs steel part clearance (negative value to allow overlap)	<p>Defines the minimum clearance or the allowed overlap for reinforcing bars when they are checked against steel parts.</p> <p>To allow reinforcing bars to overlap steel parts and to ignore the ribs of</p>

Option	Description
	<p>bars, enter a negative value. The maximum overlap is the actual bar radius.</p> <p>Tekla Structures only checks the distance from bar side to part. Tekla Structures does not check the distance from bar end to part.</p> <p>If you clear the check box, Tekla Structures will not check the clearance.</p>
<p>Reinforcing bar clearance (negative value to allow overlap)</p> 	<p>Defines the minimum clearance or the allowed overlap for reinforcing bars when they are checked against other reinforcing bars.</p> <p>To allow reinforcing bars to overlap, enter a negative value.</p> <p>If you clear the check box, Tekla Structures will not check the clearance.</p>
<p>Reinforcing bar cover thickness</p> 	<p>Defines the reinforcing bar cover thickness.</p> <p>Tekla Structures checks the cover thickness against the part that the reinforcing bar belongs to. Tekla Structures only checks the distance from bar side to part surface. Tekla Structures does not check the distance from bar end to part surface. If the bar penetrates a part surface, a clash is reported, even if the bar is completely inside a cast unit or pour.</p> <p>If you clear the check box, Tekla Structures will not check the cover thickness.</p>

Components settings

Tekla Structures uses the information on the **Components** tab when it creates parts using components.

Component properties defined in component dialog boxes override these settings. Tekla Structures only uses these settings if the corresponding boxes in the component dialog boxes are empty.

If you change settings here, Tekla Structures only applies the new settings to components you subsequently create. Components you created prior to changing the preferences are not affected.

NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

Option	Description
Profile names	<p>Defines parametric profile prefixes for plates. It is important that profile names are set up correctly so that you can use filters and wizards effectively.</p> <p>Profile names must exist in the profile catalog. If you want to use a parametric profile that does not have a name in the catalog, first add it to the Profile Catalog, then enter it here. Tekla Structures uses the Folded plate prefix when you use the folded plates in components.</p>
Bolts	<p>In components, Tekla Structures uses Factor of bolt edge distance and Compare edge distance to to check that the bolts it creates are not too close to the edge of a part, and warns you if they are. Check that Factor of bolt edge distance is set according to the standard you are using. The default edge distance setting depends on your environment.</p> <p>Compare edge distance defines whether the edge distance checks are based on bolt or hole diameter.</p> <p>To define the default bolt properties to use in connections, select a Bolt standard and Bolt size.</p>
Parts	<p>Part material defines the default part material grade.</p> <p>Part start numbers defines start numbers for parts that are Welded to primary and Welded to secondary, Loose parts, and Assembly loose parts.</p> <p>Cross-check these settings against the numbering series you define to make</p>

Option	Description
	sure they do not overlap. If they overlap, Tekla Structures may create two non-identical parts with the same part number. This generates an error in the Numbering history log file (page 281).




Drawing dimensions settings

NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

For more information about dimension settings, see Automatic dimensioning

Option	Description
Exaggeration	<p>This setting defines the default values for Exaggeration limit and Exaggeration scaling.</p> <p>When you enable the exaggeration of the dimensions, a drawing dimension that is narrower than the defined limit is expanded. Exaggeration limit defines the default value for this limit.</p> <p>Exaggeration scaling defines whether you are using Paper or Model as the exaggeration scaling method:</p> <ul style="list-style-type: none"> • If you select Paper, the exaggeration limit is multiplied by the view scale. • If you select Model, and the scale is 1:10, all the dimensions smaller than 10 mm are exaggerated regardless of the drawing scale. <p>For more information about exaggerated dimensions, see Create exaggerated dimensions.</p>
Absolute dimensions	<p>Show zero in absolute dimensions --> Yes shows zero at the zero points in absolute dimensions.</p> <p>Draw absolute dimension values parallel to dimension line --> Yes shows dimensions parallel to</p>

Option	Description
	<p>dimension lines in absolute dimensions.</p> <p>For more information, see Change the appearance of absolute dimensions</p>
Dimensions in tags	<p>Units, Format and Precision define the default unit, format and precision used in dimension tags.</p> <p>Available units: mm, cm, m, foot - inch, cm / m, inch, feet.</p> <p>Available formats: ###, ###[. #], ###.#, ###[. ##], ###.##, ###[. ###], ###.###, ### #/# and ###/##.###.</p> <p>Available precision: 0.00, 0.50, 0.33, 0.25, 1/8, 1/16, 1/32, 1/10, 1/100, 1/1000</p> <p>Show dimension in middle tag of automatic dimension defines whether you want to create dual dimension tags in assembly, single-part, cast unit, or general arrangement drawings.</p> <p>For more information about automatic dual dimensions, see Automatic view-level dimensions.</p> <p>For more information about manual dual dimensions, see Add dual dimensions manually</p> <p>When Tekla Structures creates the drawing, it adds the lower dimension tag in the selected unit, format and precision.</p>
Add mark to reinforcement	<p>Dimension Marks settings and Tagged Dimension Mark settings define the predefined property files used for dimension marks and tagged dimension marks files.</p> <p>Using the option Dimension line settings you can save the dimension properties file in the Dimension</p>

Option	Description
	<p>Properties dialog box and take it into use in rebar dimensioning.</p> <p>For more information about adding dimensions and tags, see Add dimensions to reinforcement .</p>
<p>Dimension line</p>	<p>Dimension line extension length for line arrow defines the length of the line extension for dimensions that have line arrows.</p> <p>Note that line extensions are not applied to dimensions that have different arrows from line arrows, and certain knock-off dimension types.</p> <p>For the option Tapered skewed reinforcement group, you can select skewed or horizontal presentation.</p>  <p>Below is an example of tapered skewed reinforcement group dimensions that are shown skewed:</p>  <p>For the option Tapered curved reinforcement group you can select, curved or horizontal presentation.</p>  <p>Below is an example of tapered curved reinforcement group dimensions that are shown curved:</p>

Option	Description
	

Drawing objects settings

NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

Option	Description
Edge chamfer	<p>Line color defines the default line color of the edge chamfers in drawings.</p> <p>Line type defines the default line type of the edge chamfers in drawings.</p> <p>These values are overridden by the values set in the Edge Chamfer Properties dialog box.</p> <p>For more information about edge chamfers, see Edge chamfers in drawings</p>

General settings

NOTE: On this page, **Autosave** settings are user specific. All other settings are model specific. Changing the settings does not require Tekla Structures restart.

Option	Description
Autosave	<p>Autosave interval: Autosave after every xx modeling or editing commands defines how often Tekla Structures automatically saves a model and a drawing.</p> <p>This number represents the number of commands you have given. For example, if you create many objects without interrupting (Esc), it counts as one command.</p> <p>Autosave after creating every xx drawings defines the number of</p>

Option	Description
	<p>drawings after which Tekla Structures automatically saves your work.</p> <p>For more information, see:</p> <p>Save a model</p> <p>Autosaving in multi-user mode</p>
Default adaptivity	<p>Off means that adaptivity is not defined.</p> <p>Relative defines that handles retain their relative distances to the nearest part faces in relation to the part's overall size.</p> <p>Fixed defines that handles retain their absolute distances to the nearest part faces.</p> <p>You can also modify the adaptivity settings for each part separately. These modifications override the default settings in the Options dialog box.</p> <p>For more information about reinforcement and adaptivity, see Use adaptivity to modify a reinforcement</p>

Load modeling settings

Use the settings on the **Arrow size** tab to scale loads in model views.

Use the settings on the other tabs of this page to define the building code and safety factors Tekla Structures uses in load combination.

NOTES:

- Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.
- You should not need to change the building code or safety factors during the project. If you change these settings, you will also need to change the load group types and check the load combinations.

Numbering settings

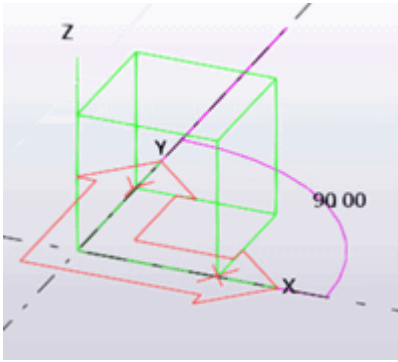
NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

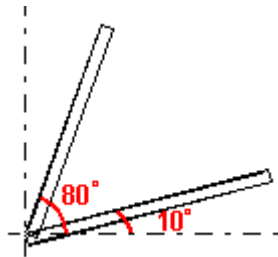
Option	Description
Position number separator	Defines the default position number separator. The options are dot (.), comma (,), slash (/), and hyphen (-).
Rebar position number separator	Defines the default reinforcing bar position number separator. The options are dot (.), comma (,), slash (/), and hyphen (-).
Part number type	Defines the default part number type. The options are Part number and Combined assembly / part number .

Orientation marks settings

NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

For details of what affects the part orientation and how, see Indicate part orientation.

Option	Description
North direction	Project north (degrees counter clockwise from global x) defines which direction is north in the model. Enter the value in degrees counter-clockwise from the global x axis. 
Part viewing direction	Defines which direction parts are viewed from in drawings.
Beam skew limit Column skew limit	Tekla Structures uses limit angles to determine whether a part is a beam or a column when creating orientation marks. Tekla Structures

Option	Description
	<p>treats parts outside these limits as braces.</p>  <p>Parts skewed more than 80° are columns.</p> <p>Parts skewed less than 10° are beams.</p>
Preferred location for mark	Defines the location of part marks in drawings, to the left or right end of the part.
Mark always to center of column	<p>This setting only affects columns.</p> <p>Yes places part marks in the center of columns in plan views. To indicate part orientation, include compass direction (Face direction) in the part mark instead.</p> <p>No places part marks on the same flange in general arrangement and assembly drawings.</p>

Reinforcement settings

NOTE: Settings on this page are model specific and apply only to rebar sets, not to single reinforcing bars, reinforcing bar groups, or reinforcement meshes. Changing the settings does not require Tekla Structures restart, but you need to use the **Rebar set --> Regenerate rebar sets** command on the **Concrete** tab to apply the changes to existing rebar sets in the model.

Option	Description
Concrete cover	<p>Define the default concrete cover thickness between the bars in rebar sets and the following faces of concrete parts or pour objects:</p> <ul style="list-style-type: none"> • Top • Bottom • Sides

Option	Description
	Concrete cover on object sides follows the global coordinate system of the model, not the current work plane. You can also define concrete cover settings for each part separately using user-defined attributes. These modifications override the default settings in the Options dialog box. For more information, see Define the reinforcement cover thickness.
Minimum lengths to be created	Define Minimum bar length to prevent Tekla Structures from creating reinforcing bars that are too short. This setting is primarily for straight bars. Enter the minimum bar length as Distance or as Coefficient of bar diameter . Define Minimum straight start/end leg length for bent reinforcing bars. Enter the minimum leg length as Distance or as Coefficient of bar diameter .

Units and decimals settings

NOTE: Settings on this page are model specific. Changing the settings does not require Tekla Structures restart.

The number located to the right of each option indicates the number of decimals. The number of decimals affects the input and storage accuracy. Always use a sufficient number of decimals.

For more information on unit and decimal settings, see Change units and decimals.

Option	Description
Length	mm, cm, m, in (decimal), ft (decimal), ft-in
Angle	°, rad

Option	Description
Spring constant	kg/m kg/cm kg/mm T/m T/cm T/mm N/m N/cm N/mm daN/m daN/cm daN/mm kN/m kN/cm kN/mm lbf/in lbf/ft
Rot. spring constant	kgm/rad kgm/° Tm/rad Tm/° Nm/rad Nm/° daNm/rad daNm/° kNm/rad kNm/° lbf-in/rad lbf-in/° lbf-ft/rad lbf-ft/° kip-in/rad kip-in/° kip-ft/rad kip-ft/°
Factor	Enter a value using the arrow buttons.
Force	kg T N daN kN lbf kip

Option	Description
Distributed load	kg/m T/m N/m daN/m kN/m lbf/in lbf/ft kip/in kip/ft
Surface load	kg/m ² T/m ² N/m ² daN/m ² kN/m ² psi psf ksi ksf
Moment	kgm Tm Nm daNm kNm lbf-in lbf-ft kip-in kip-ft
Distributed moment	kgm/m Tm/m Nm/m daNm/m kNm/m lbf-ft/ft kip-ft/ft
Temperature	°C, °F, K
Deformation	mm cm m in (decimal) ft (decimal) ft-in

Option	Description
Section dimension	mm cm m in (decimal) ft (decimal) in ft-in
Angle	°, rad
Area	mm ² cm ² m ² in ² ft ²
Section modulus	mm ³ cm ³ m ³ in ³ ft ³
Moment of inertia	mm ⁴ , cm ⁴ , in ⁴
Radius of inertia	mm cm m in (decimal) ft (decimal) ft-in
Torsion constant	mm ⁴ , cm ⁴ , in ⁴
Warping constant	mm ⁶ , cm ⁶ , in ⁶
Cover area	m ² /m mm ² /m cm ² /m ft ² /ft in ² /ft in ² /in

Option	Description
Strength	kg/m ² kg/cm ² kg/mm ² T/m ² T/cm ² T/mm ² N/m ² N/cm ² N/mm ² daN/m ² daN/cm ² daN/mm ² kN/m ² kN/cm ² kN/mm ² psi psf ksi ksf
Modulus	kg/m ² kg/cm ² kg/mm ² T/m ² T/cm ² T/mm ² N/m ² N/cm ² N/mm ² daN/m ² daN/cm ² daN/mm ² kN/m ² kN/cm ² kN/mm ² psi psf ksi ksf
Density	kg/m ³ T/m ³ N/m ³ kN/m ³ lbf/ft ³

Option	Description
Weight	kg T N lbf kip
Strain	o/oo, %
Thermal dilat. coeff.	1/°C, 1/°F, 1/K
Ratio	o/oo, %
Volume	mm ³ cm ³ m ³ in ³ ft ³
Length	mm, cm, m, in (decimal), ft (decimal), ft-in
Angle	°, rad
Reinforcement area	mm ² cm ² m ² in ² ft ²
Transverse reforc.	m ² /m mm ² /m cm ² /m ft ² /ft in ² /ft in ² /in
Weight	kg T N lbf kip
Mass/Length	kg/m T/m N/m daN/m kN/m lbf/ft

Option	Description
Volume	mm^3 cm^3 m^3 in^3 ft^3
Force	kg T N daN kN lbf kip
Distributed load	kg/m T/m N/m daN/m kN/m lbf/in lbf/ft kip/in kip/ft
Surface load	kg/m^2 T/m^2 N/m^2 daN/m^2 kN/m^2 psi psf ksi ksf
Moment	kgm Tm Nm daNm kNm lbf-in lbf-ft kip-in kip-ft
Temperature	$^{\circ}\text{C}$, $^{\circ}\text{F}$, K

Option	Description
Stress	kg/m ² kg/cm ² kg/mm ² T/m ² T/cm ² T/mm ² N/m ² N/cm ² N/mm ² daN/m ² daN/cm ² daN/mm ² kN/m ² kN/cm ² kN/mm ² psi psf ksi ksf
Deformation	mm cm m in (decimal) ft (decimal) ft-in

See also

[File storing options and advanced options \(page 234\)](#)

Settings defined by advanced options

Advanced options can be user-, model-, system or role-specific:

- **User-specific advanced options** are saved in your local `options.bin` file, which is by default located in `C:\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings`, and work in the specified way in all models that you have. The folder can be changed using the advanced option `XS_USER_SETTINGS_DIRECTORY`. In the **Advanced Options** dialog box, the type is **USER**. Some user-specific advanced options require restarting of Tekla Structures after changing the value.
- **Model-specific advanced options** work in the specified way only in the current model. They are saved to `options_model.db` and `options_drawings.db` under model folder. In the **Advanced Options** dialog box, the type is **MODEL** or **DRAWING**. Some special model-specific

options that are not visible in the **Advanced Options** dialog box can be changed from `options.ini` file under the model folder.

- **System-specific advanced options** are general to all sessions of Tekla Structures, and work in the specified way for all users and in all models. In the **Advanced Options** dialog box, the type is **SYSTEM**. A system-specific advanced option can be stored to `options.ini` under model folder by clicking **SYSTEM** next to the option and changing it to **MODEL(SYSTEM)**. Note that the changed value only works for the current model. A **MODEL(SYSTEM)** advanced option can be changed back to **SYSTEM** by changing it to **SYSTEM**, and in this case it will be removed from the `options.ini` file under model folder. Some system-specific advanced options require restarting of Tekla Structures after changing the value.

The system-specific advanced options are read from environment `.ini` files:

- **Global system settings** are read from common [env_global_default.ini \(page 231\)](#) in `..\ProgramData\Tekla Structures\<version>\environments\common\`. These settings are used in all environments.
- **Environment-specific system settings** are read from [env_<environment>.ini \(page 232\)](#) in your environment folder. They override any settings that are defined on a global level in `env_global_default.ini`.
- **Role-specific system settings** are read from [role_<role>.ini \(page 232\)](#) in environment folder. They override any settings that are defined on a global and environment level in `env_global_default.ini` and `env_<environment>.ini`.
- **Company level system-specific system settings** override all other system-specific advanced options. You can save them in the firm or project folders by setting the folders for the advanced options `XS_FIRM` and `XS_PROJECT`.
- **SYSTEM(ROLE)** options are typically role specific. The settings are read from `.ini` files and are not saved to the databases. When changed or if the type is changed, the option will become model specific and be saved to the databases. **MODEL/DRAWING(ROLE)** options are **SYSTEM(ROLE)** options whose type and/or setting has been changed. The change would be used when you want the **SYSTEM(ROLE)** option to be saved with the model to `options_model.db` and `options_drawings.db` under model folder. These settings can be set back to **SYSTEM(ROLE)**, which will then take into use the default value.

See also

[Typical initialization files \(.ini files\) and their reading order \(page 226\)](#)

Change the advanced option values in the Advanced Options dialog box

Use advanced options to configure Tekla Structures to suit the way you work, or to comply with specific project requirements or industry standards. Change the advanced options only in the **Advanced Options** dialog box. The settings in the **Advanced Options** dialog override the settings in any other initialization file.

1. On the **File** menu, click **Settings --> Advanced options** to open the **Advanced Options** dialog box, or press **Ctrl+E**.

2. Browse the categories to find the advanced option you want to set.

You can also enter a search term in the **Search** box. To search the search term in all categories, select **In all categories**. You can also use wildcards. For example, to find all advanced options that have the words `anchor` and `filter` and that have any characters between these two words, enter `anchor*filter`.

3. Set the advanced option to the desired value by entering the value or by selecting the value from the list.
 - You can change the type of the role-specific advanced options from **SYSTEM (ROLE)** to **MODEL (ROLE)** or **DRAWING(ROLE)** and vice versa from the list next to the option type. When you change the option type to **SYSTEM(ROLE)**, the value automatically changes to the default value. When you enter a value for a **SYSTEM (ROLE)** option, it changes to **MODEL (ROLE)** or **DRAWING(ROLE)**.
 - You can change the type of system-specific advanced options from **SYSTEM** to **MODEL(SYSTEM)**, in which case the value is saved in the `options.ini` file in the model folder. If you reset the advanced option back to **SYSTEM**, it will be removed from the `options.ini` file.
 - You can use switches with some advanced options, for example, to define the contents of marks: `%TPL:PROJECT.NUMBER%`.
 - If you need to enter a folder path, you can type a backslash at the end of the folder path or leave it out.
4. Click **Apply** or **OK**.

TIP To create a complete list of advanced options in a text file, click **Write to file**. The list shows the name of the advanced option together with its current value and type. Note that writing to a file is only an export of the current settings, it is not another way of changing the advanced options.

See also

[Settings defined by advanced options \(page 253\)](#)

5.4 Input files (.inp files)

Tekla Structures uses input files to manage dialog boxes and for defining how components work. All input files have the extension `.inp`.

Input files that you can use, for example, for customizing Tekla Structures are listed below.

File	Description
<code>analysis_design_config.inp</code>	Contains settings for analysis and design.
<code>fltprops.inp</code>	Includes materials and dimensions of available flat bars (page 265) .
<code>objects.inp</code>	Used to manage user-defined attributes (page 259) .
<code>pop_mark_parts.inp</code>	Contains settings for pop-marking.
<code>privileges.inp</code>	Used to control access rights.
<code>profitab.inp</code>	Contains available parametric profiles (page 162) .
<code>rebar_config.inp</code>	Contains settings for reinforcement marks.
<code>rebar_schedule_config.inp</code>	Contains internal bending types of reinforcing bars and their mapping to area specific bending codes. Rebar Shape Manager is a more versatile way to define reinforcing bar bending shapes.

See also

[Environment database file \(page 260\)](#)

Properties of the objects.inp file

The example below shows the main properties of `objects.inp`.

```
attribute("MY_INFO_1", "My Info 1", string, "%s", no, none, "0.0", "0.0")
{
    value("", 0)
```

Property	In the example	Description
<code>attribute</code> or <code>unique_attribute</code>	<code>attribute</code>	<code>attribute</code> is a regular attribute, which is

Property	In the example	Description
		<p>copied with other part properties.</p> <p><code>unique_attribute</code> is a non-copyable attribute. The value of the attribute is never copied to another part. For example part checking status attributes usually cannot be copied.</p>
attribute_name	MY_INFO_1	<p>Attribute name, used to find the attribute value.</p> <p>Ensure that Tekla Structures does not already use the attribute name you use. Consider using a prefix that ensures the name is unique, for example, your initials, or an abbreviation of your company name.</p> <p>The attribute name is case-sensitive. Do not use spaces or reserved characters in attribute names. The maximum length of the name can be 19 characters.</p> <p>To include the attribute in a report or template, add the name of the attribute to your layout in the Template Editor. When you run a report or create a drawing, Tekla Structures displays the current value of the attribute.</p>
label_text	My Info 1	<p>Label that Tekla Structures displays in the dialog box.</p> <p>Some default attributes have prompts like <code>j_comment</code>, meaning</p>

Property	In the example	Description
		that the prompt comes from the joints.ail message file.
value_type	string	<p>integer or float for numbers</p> <p>string for text</p> <p>string_not_modifiable for text whose modification is prevented. A field with the string_not_modifiable property is always displayed as dimmed and it cannot be switched on or off. The value in the field is not saved when clicking the Apply button or modified when clicking the Modify button.</p> <p>option for lists</p> <p>date for date with small calendar</p> <p>date_time_min for date and time [12:00] with small calendar</p> <p>date_time_sec for date and time [12:00:00] with small calendar</p>
field_format	%s	<p>Definition of the field format in the dialog box</p> <ul style="list-style-type: none"> • %s for strings • %d for numbers
special_flag	no	<p>no or yes</p> <p>For parts: consider in numbering</p>

Property	In the example	Description
		For drawings: display the attribute value in drawing list For other elements: no effect
check_switch	none	none This option is not used.
attribute_value_max	0.0	0.0 This option is not used.
attribute_value_min	0.0	0.0 This option is not used.

Define and update user-defined attributes (UDAs)

The property pane and many dialog boxes contain user-defined attributes (UDAs) for various objects, including beams, columns, bolts and drawings. Tekla Structures displays these fields when you click the **More** button in the property pane or the **User-defined attributes** button in a dialog box. For example, comment, locked, and erection status are user-defined attributes.

When you define new user-defined attributes

The user-defined attributes are managed in the [objects.inp \(page 256\)](#) file. To define new user-defined attributes, create your own `objects.inp` file in the model, project or firm folder. After adding your own user-defined attributes, you need to run the **Diagnose and change attribute definitions** command to [update the definitions \(page 260\)](#) in the model.

When you [define new user-defined attribute \(page 261\)](#), make the definition of the user-defined attribute unique. This is because a user-defined attribute cannot have different definitions for different object types, such as beams and columns.

The `object.inp` files are merged so that if there are user-defined attributes in any of the files, they are displayed in the user interface. Tekla Structures merges the files in a way that eliminates duplicate attributes. If Tekla Structures encounters the same attribute name in different `objects.inp` files, the attribute from the first read `objects.inp` file will be used.

If you need to have several `objects.inp` files in the same folder, you can use a suffix in the file name to use all the files. This enables having several `objects_<suffix>.inp` files in the same folder. The file name could be `objects_precast.inp`, for example.

WARNING Do not copy the `objects.inp` file in the `..\environments\common\inp\` folder. Copying the file creates unnecessary duplicates and later `objects.inp` updates by Tekla Structures can be lost.

Tekla Structures reads the `objects.inp` files from the following folders in the following order:

1. model folder
2. project folder
3. firm folder
4. system folder
5. `inp` folder

See also

[Environment database file \(page 260\)](#)

Update definitions of user-defined attributes (UDAs) in a model

When you have changed definitions of a user-defined attribute by modifying the `objects.inp` file, you need to update the definitions in the model.

1. Open the model.
2. On the **File** menu, click **Diagnose & repair** and in the **Utilities** area, click **Diagnose and change attribute definitions**.

The **Diagnose & Change Attribute Definitions** dialog box opens.

3. Select an attribute from the list on left side to see the comparison of current definitions and `objects.inp` definitions.
4. Select the definitions you want to update in the **Object classes with Objects.inp differences compared to current settings** list.
5. Click **Change current settings to selected Objects.inp settings**.

See also

[Define and update user-defined attributes \(UDAs\) \(page 259\)](#)

[Environment database file \(page 260\)](#)

[Properties of the objects.inp file \(page 256\)](#)

[Example: Create and update a user-defined attribute \(UDA\) \(page 261\)](#)

Environment database file

To guarantee consistent model behavior when a model is used with different roles, the environment database file (`environment.db`) contains the definitions of the user-defined attributes (UDAs) used in the model.

When you create a new model, Tekla Structures merges the definitions from your [objects.inp \(page 256\)](#) files to the `environment.db` file. Later, when you add **new** user-defined attributes in the `objects.inp` file, the definitions are saved in `environment.db` as you open the model.

You can modify your [user-defined attributes \(page 259\)](#) in an `objects.inp` file but the **changed** definitions do not come into effect automatically. If there are conflicts, the definitions in `environment.db` win. You need to run the **Diagnose and change attribute definitions** command to see the conflicts between `environment.db` and `objects.inp`, and select the attribute definitions that you want to update.

See also

[Update definitions of user-defined attributes \(UDAs\) in a model \(page 260\)](#)

[Example: Create and update a user-defined attribute \(UDA\) \(page 261\)](#)

Example: Create and update a user-defined attribute (UDA)

This example shows how to create your own user-defined attribute (UDA) and update the model to use the changed attribute definition.

Create a user-defined attribute

1. Create a new model and save it.

The user-defined attributes in the model are merged from [objects.inp \(page 259\)](#) files and Tekla Structures saves the attribute definitions in the [environment.db \(page 260\)](#) file in the model folder.

2. Close the model.
3. Create an input file called `objects.inp` in the model folder by using a standard text editor.
4. Enter the following information in `objects.inp`. For details about the properties in the attribute string, see [objects.inp \(page 259\)](#).

```
/
*****
*****/

/* Part attributes */

/
*****
*****/

part(0,"Part")
{
/* User defined tab page */
tab_page("My UDA tab")
```

```

{
/* User defined attribute */
attribute("MY UDA", "My UDA", string,"%s", no, none,
"0,0", "0,0")
{
value("", 0)
}
}
tab_page("My UDA tab", "My UDA tab", 19)
modify (1)
}
/
*****
*****/

/* Column attributes */
/
*****
*****/

column(0,"j_column")
{
/* Reference to the user defined tab page that is defined
above in */
/* the part() section: */
tab_page("My UDA tab", "My UDA tab", 19)
modify (1)

```

To see the example text file, click [objects.inp - example 1](#).

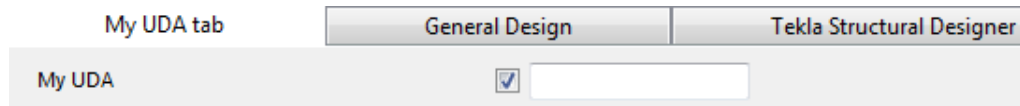
NOTE If you want to create a user-defined attribute that also affects numbering, set the [special_flag \(page 256\)](#) property of the attribute to `yes` (it is `no` in the example above). Also, just like in the example above, the definition of the `tab_page` must be in the `part` section, and the `column` (beam, etc.) section must have only a reference to it.

5. Save `objects.inp`.

Test the user-defined attribute

1. Open the model.
2. Create a steel column.

3. Double-click the steel column to open its properties in the property pane.
4. Click the **More** button.
5. Go to **My UDA tab**.



6. Enter a value in the **My UDA** box.
7. Click **Modify**.
8. Copy the steel column.
9. Check the **My UDA** box of the new steel column.
The attribute value was also copied.
10. Close the model.

Modify the user-defined attribute to make it unique

1. Open the `objects.inp` file in the model folder by using a standard text editor.
2. Enter `unique_` before the user-defined attribute.

```

/
*****
*****/

/* User-defined attributes */

/
*****
*****/

part(0,"Part")
{
/* Common tab pages for part attributes */
tab_page("My UDA tab")
{
unique_attribute("MY UDA", "My UDA", string,"%s", no,
none, "0,0", "0,0")
{
value("", 0)
}
}
tab_page("My UDA tab", "My UDA tab", 19)
modify (1)

```

```

}
/
*****
*****/

/* Column attributes */
/
*****
*****/

column(0,"j_column")
{
  tab_page("My UDA tab", "My UDA tab", 19)
  modify (1)
}

```

This makes the user-defined attribute unique, meaning that the value of the user-defined attribute will not be copied to another part.

3. Save `objects.inp`.

To see the example text file, click [objects.inp - example 2](#).

Test the unique user-defined attribute

1. Open the model.
2. Enter a value in the **My UDA** box for a steel column and click **Modify**.
3. Copy the steel column.
4. Check the **My UDA** box of the new column.
5. The value was copied, so the user-defined attribute in the model is not unique. There is a conflict between the `environment.db` and `objects.inp` definitions.

Update the definitions of user-defined attributes

1. On the **File** menu, click **Diagnose & repair** and in the **Utilities** area, click **Diagnose and change attribute definitions**.

The **Diagnose & Change Attribute Definitions** dialog box opens.

2. Select **My UDA** in the **Attribute** area on the left.

You can see that **My UDA** is not unique in the current setting, but it is set to unique in `objects.inp`.

Object classes with Objects.inp differences compared to current settings		
Current settings	Object class names	Objects.inp settings
unique=no	part column	unique=yes

3. Select the definition in the area on the right.
4. Click **Change current settings to selected Objects.inp settings**.
Now the definition of the user-defined attribute is updated in the model.
If you now copy a steel column that has a value for **My UDA**, the value is not copied to the new column.

See also

[Update definitions of user-defined attributes \(UDAs\) in a model \(page 260\)](#)

[Define and update user-defined attributes \(UDAs\) \(page 259\)](#)

[Properties of the objects.inp file \(page 256\)](#)

Show plates as flat bars in drawings and reports

Tekla Structures can show plates as the equivalent flat bars for manufacturing. Tekla Structures displays the plates as flat bars in reports and drawings.

1. Set the advanced option XS_USE_FLAT_DESIGNATION to `TRUE`.
2. Indicate the prefix you want to use for flat bars using the advanced option XS_FLAT_PREFIX.

For example, XS_FLAT_PREFIX=FLAT.

3. Set other platework-related advanced options as required.
4. Define materials, thickness, and width of available flat bars in the [Fltprops.inp \(page 265\)](#) file.

-
- TIP** • To prevent Tekla Structures from displaying the profile in metric units in the US Imperial version, add the flat bar prefix to the profitab.inp file as a parametric profile.
- See also page **Platework** in the **Advanced Options** dialog box for information about advanced options related to platework.
-

Define flat bar sizes with the Fltprops.inp file

Use the `Fltprops.inp` file, located in `..\ProgramData\TeklaStructures\<version>\environments\<environment>\profil`, to define flat bar thickness, width and material.

NOTE Copy the `Fltprops.inp` file to a model, project or firm folder and then modify the file in the new location as required.

The first row in the file contains flat bar material definitions (enclosed in quotes " ") followed by plate thicknesses. If you do not define a material, you

can use all materials for all flat bars. The following rows define the widths of available flat bars.

The units are millimeters.

Example

Fltprops.inp contains the following data:

```
5, 6, "S235", 8, 10, "S275J0", 10, 15
40, 45
50, 55
60, 65
70, 75
100, 110
200, 220
```

With the above data, Tekla Structures displays the following plates as flat bars:

Plate	Material
5x40, 5x45, 6x50, 6x55	All materials
8x60, 8x65, 10x70, 10x75	S235
10x100, 10x110, 15x200, 15x220	S275J0

The flat bars get the prefix that is set in the XS_FLAT_PREFIX advanced option.

See also

[Show plates as flat bars in drawings and reports \(page 265\)](#)

Define unfolding parameters in the unfold_corner_ratios.inp file

The unfolding parameters define the location of the neutral axis when a profile is unfolded. The neutral axis is a line which runs along the length of a profile where stress and strain are equal to zero. Tekla Structures uses these parameters to create NC files and to display unfolded profiles in single-part drawings.

To define unfolding parameters, modify the `unfold_corner_ratios.inp` file, located in `..\ProgramData\Tekla Structures\<version>\environments\common\system`, using a standard text editor. You can copy the `unfold_corner_ratios.inp` file to a model, project or firm folder and then modify the file in the new location as required. Tekla Structures searches for this file in the default search order.

After modifying the `unfold_corner_ratios.inp` file, restart Tekla Structures for the changes to take effect.

NOTE The settings in the `unfold_corner_ratios.inp` file have no effect in the following cases:

- If the advanced option `XS_USE_OLD_POLYBEAM_LENGTH_CALCULATION` is set to TRUE.
 - If the advanced option `XS_CALCULATE_POLYBEAM_LENGTH_ALONG_REFERENCE_LINE` is set to TRUE. This only applies to polybeams with straight sections.
-

Unfold parameter properties

See below for an example of unfolding parameters in the `unfold_corner_ratios.inp` file and the descriptions of the parameters.

```
1 HE300A S235JR 0 180 2 0 1000 .7
```

Property	In the example	Description
Type	1	1 is polybeams 2 is plates modeled as polybeams (for example, PLT) 3 is for parts which are not unfolded and follow the old polybeam calculation (for example, the line 3 <code>L* *</code> disables unfolding of L profiles)
Profile	HE300A	You can also use wildcards with profile, for example, <code>HE300*</code> .
Material	S235JR	You can also use wildcards with material, for example, <code>S235*</code> .
Rotation / thickness min	0	For polybeams: the minimum angle when the profile is rotated around its longitudinal axis For plates: the minimum thickness of plate
Rotation / thickness max	180	For polybeams: the maximum angle when the profile is rotated

Property	In the example	Description
		around its longitudinal axis For plates: the maximum thickness of plate
Flag	2	This property defines what kind of parts are affected by the next two properties. 1 is sharp folds. Only polybeams with straight chamfers are affected. 2 is curved bends. Only polybeams with curved chamfers are affected.
Angle / radius min	0	For sharp folds: the minimum angle For curved bends: the minimum radius
Angle / radius max	1000	For sharp folds: the maximum angle For curved bends: the maximum radius
Ratio	.7	Defines how much the profile stretches or shrinks when unfolded. Ratio = (1 - the relative location of the neutral axis). If only the inner surface of the profile shrinks, the ratio is 1. If only the outer surface of the profile stretches, the ratio is 0. By default, the ratio is 0.5 for length calculation and 0.0 for bending radius calculation. Tekla Structures applies the unfolding ratio if the profile properties are within the range indicated by the

Property	In the example	Description
		minimum and maximum values.

See also

[Folder search order \(page 307\)](#)

5.5 Data files (.dat files)

Data files contain information used by certain components, or **Rebar shape manager**, for example.

WARNING These files affect the operation of components or **Rebar shape manager**. Do not modify the files listed here unless you are an administrator.

File	Description
joints.dat	Contains data used in Handrailing (1024) and Stanchions (S76) components. Used in the Stanchion connection type option.
railings.dat	Contains data used in Handrailing (1024) . Used in the Stanchion connection type option.
steps.dat	Contains the data for Stairs (S82) and Stairs (S71) . Used in the Step profile and Catalogue step options.
std_flange_plates.dat	Contains data for Tapered column (S99) . Used in the options: <ul style="list-style-type: none"> • Outer flange profile • Inner flange profile • Top plate profile
std_stiffener_plates.dat	Contains data used in Tapered column (S99) . Used in the Horizontal stiffener profile box.
marketsize.dat	Contains available market sizes for certain material grade. Can be used with <code>fMarketSize()</code> function in the custom component editor.
import_macro_data_types.dat	Contains the user-defined attributes that you can include in an input file in attribute import.
RebarShapeManager.CustomProperties.dat	Contains the custom properties, template attributes, and user-defined attributes that you

File	Description
	can use in bending shape rules in Rebar shape manager .

Note that default data files are read from the environment's `\system` folder, but user-defined data files are stored in the model's `\attributes` folder.

See also

[Define flat bar sizes with the Fltprops.inp file \(page 265\)](#)

5.6 Message files

Tekla Structures uses the information in the message files to display messages in the user interface. Message files include, for example, texts used in dialog boxes.

- Message files with the `.ail` extension are located in the folder `..\Tekla Structures\<version>\messages`.
- Message files with the `.xml` extension are located in the folder `..\Tekla Structures\<version>\messages\DotAppsStrings`.

The files include texts in languages in which the Tekla Structures user interface is available.

See also

[Customize message files \(page 270\)](#)

Customize message files

You can customize the messages that Tekla Structures displays in the user interface.

1. Do one of the following:
 - To modify an `.ail` message file, go to the `..\Tekla Structures\<version>\messages` folder.
 - To modify an `.xml` message file, go to the `..\Tekla Structures\<version>\messages\DotAppsStrings` folder.
2. Open the message file you want to customize using a standard text editor.
3. Modify the message as required.
4. Save the message file.

Example: customize a message file

In this example, you will modify a message that Tekla Structures uses for near side plates in drawings. You want Tekla Structures to display (NS) instead of (N/S).

1. Go to the `..\Tekla Structures\<version>\messages` folder.
2. Open `by_number.ail` using a standard text editor.
The `by_number.ail` file contains both prompts and default texts that Tekla Structures uses in drawings.

3. Browse to the following section:

```
string by_number_msg_no_675
{
    ...
    entry = ("enu", "(N/S)");
};
```

4. Change (N/S) to (NS) in the entry row.
5. Save and close the file.

See also

[Message files \(page 270\)](#)

5.7 Standard files

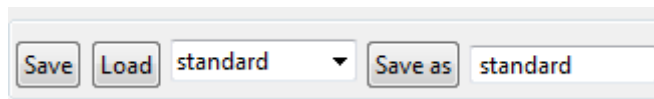
Standard files are property files that Tekla Structures uses by default when you apply commands.

These properties are displayed in the property pane of different model objects, such as beams, columns or plates, or in the dialog boxes of other objects.

- In the property pane: the properties are taken into use when you select the **standard** option in the upper part of the property pane. The properties are loaded immediately, and the values that are different from the currently selected object are highlighted in the property pane.



- In the dialog boxes: the properties are taken into use when you select the **standard** option in the list next to the **Load** button, and click the **Load** button.



Standard files are named `standard.*` where the symbol `*` is the file name extension. For example, `standard.clm` file is used for column properties. Note that default standard files are read from the environment's `\system` folder, but user-defined standard files are stored in the `.. \TeklaStructuresModels\<model_name>\attributes` folder.

List of standard files saved with Save defaults command

You can save a set of standard files in the model folder. You can then copy the standard files to the project or firm folders for future use, to set up Tekla Structures to suit the way you work.

To save a set of standard files in the model folder, go to **Quick Launch**, start typing `save defaults` and select the **Save defaults** command from the list. Tekla Structures saves a set of standard files in the `attributes` folder in the current model folder.


File	Property
<code>standard.cpl</code>	Contour plate properties
<code>standard.fpl</code>	Folded plate properties
<code>standard.prt</code>	Beam properties
<code>standard.clm</code>	Column properties
<code>standard.crs</code>	Orthogonal beam properties
<code>standard.dia</code>	Twin profile properties
<code>standard.scr</code>	Bolt properties
<code>standard.wld</code>	Weld properties
<code>standard.prp</code>	Project properties
<code>standard.ler</code>	Layer properties
<code>standard.fms</code>	Plotting frames
<code>standard.num</code>	Numbering setup
<code>standard.mvi</code>	Model view properties
<code>standard.ipc</code>	Concrete item properties
<code>standard.ips</code>	Item properties
<code>standard.bpl</code>	Plate properties

See also

[Settings in the Options dialog box \(page 235\)](#)

5.8 Property files



Tekla Structures stores a number of files, all of which contain object properties, in the current model folder.

- In the property pane: Tekla Structures creates property files when you click .
- In the dialog boxes: Tekla Structures creates property files when you click **Save** or **Save as**.

Note that the default property files are read from the environment's `\system` folder, but user-defined property files are stored in the model's `\attributes` folder.

Example

You can change the standard column properties to create a new type of column that you call `custom1`.

1. In the property pane, enter or modify the properties you want to save.
2. In the box next to the  button, enter a name for the new set of properties, for example, `custom1`.
3. Click .

The set of properties has now been added to the list of saved properties in the current model folder, in the `\attributes` folder.

5.9 Catalog files

Tekla Structures uses ASCII and binary files to manage profile, material, reinforcing bar, bolt and bolt assembly catalogs.

Each environment has its own folder, where the files related to different catalogs are stored. For example, `..\environments\uk\profil\` contains the files for managing catalog files used in the United Kingdom.

The following table lists files and file types related to catalogs.

File type	File name	Used for	Located in
<code>.inp</code>	<code>profitab.inp</code>	Defines the names that you can use for parametric profiles.	<code>..\ProgramData\Tekla Structures\<version>\environments</code>

File type	File name	Used for	Located in
			\<environment> \profil
	rebar_database.inp	Contains details of the reinforcement used in concrete structures. Includes both the standard bending radii and the standard hook dimensions.	..\ProgramData \Tekla Structures \<version> \environments \<environment> \profil
	mesh_database.inp	Contains details of the reinforcement meshes used in concrete structures.	..\ProgramData \Tekla Structures \<version> \environments \<environment> \profil
.cnv	matexp_<software>.cnv	Contains information to convert material names when transferring model information using links. For example, converts S235JR to FE360B for DSTV.	..\ProgramData \Tekla Structures \<version> \environments \<environment> \profil
	prfexp_<software>.cnv	Contains information to convert profile names when transferring model information using links. For example, converts HEA100 to HE100A for DSTV.	..\ProgramData \Tekla Structures \<version> \environments \<environment> \profil
.clb	For example, RU_CF.clb	Contains the definitions of parametric profiles used in profitab.inp.	..\ProgramData \Tekla Structures \<version> \environments \common\inp
.lis	You can define the file name while exporting.	Created when you export bolt, profile and material catalogs.	You can define the folder where to export the files.

File type	File name	Used for	Located in
.db	assdb.db	The bolt assembly catalog.	..\ProgramData Tekla Structures \<version> \environments \<environment> \profil
	screwdb.db	The bolt catalog.	..\ProgramData Tekla Structures \<version> \environments \<environment> \profil
.bin	profdb.bin	The profile catalog.	..\ProgramData Tekla Structures \<version> \environments \<environment> \profil
	matdb.bin	The material catalog.	..\ProgramData Tekla Structures \<version> \environments \<environment> \profil

See also

[Customize the profile catalog \(page 146\)](#)

[Customize the material catalog \(page 138\)](#)

[Customize the bolt catalog \(page 205\)](#)

5.10 Font files and font conversion files

You can define the location of font files with the advanced option `DXK_FONTPATH` in the `teklastructures.ini` or your environment initialization file. For example, you can use fonts available in the folder `..\ProgramData\Tekla Structures\<version>\environments\common\fonts`.

This folder includes the following fonts:

Font	Font type
fixfont.fon	Tekla Structures system font

Font	Font type
romco.fon	Tekla Structures system font
romsim.fon	Tekla Structures system font
romsim8.fon	Tekla Structures system font
GOST 2.304-81 type A.ttf	True Type font (Cyrillic)
GOST 2.304-81 type B.ttf	True Type font (Cyrillic)

Fonts are converted using font conversion files available in the same folder:

File	Description
template_fonts.cnv	Used for converting Tekla Structures system fonts (Template Editor fonts) to Windows fonts in DWG/DXF export.
dxg_fonts.cnv	Used for converting True Type fonts to SHX fonts (font format understood by AutoCAD) in DWG/DXF export.

See also

[Initialization files \(.ini files\) \(page 226\)](#)

5.11 Symbol files

Symbols are used for example in various places in drawings, for example, as separate objects, and in marks.

You can create symbols with Symbol Editor. In this case, the file name extension is `.sym`. You can also use symbols of `.dwg` format.

Tekla Structures symbol files are by default located in the folder `..\environments\common\symbols`.

5.12 Files related to templates, reports and drawings

Tekla Structures has several files that relate to templates, reports, drawings and printing.

File or file type	Description	Location
<code>.rpt</code>	Report templates (page 311) created with the Template Editor	<code>..\environments\<your_environment>\system\</code> and its role-specific sub-folders

File or file type	Description	Location
.tpl	Drawing templates (page 311) created with the Template Editor	..\environments \<your_environment> \template
.lay	Layout definitions created with the Drawings & reports --> Drawing properties --> Drawing layout command.	..\environments \<your_environment> \system\ and its role-specific sub-folders
plotdev.bin	Printer device definitions created with the Printer Catalog printer instances.	..\environments \<your_environment> \system
xdproc	Master Drawing Catalog rule set	..\environments \<your_environment> \system\ and its role-specific sub-folders
xdproc.master	Master Drawing Catalog master drawing file	..\environments \<your_environment> \system\ and its role-specific sub-folders
xdproc.master.png	Master Drawing Catalog sample (preview) image files	..\environments \<your_environment> \system\ and its role-specific sub-folders
xdproc.png	Master Drawing Catalog thumbnail image files	..\environments \<your_environment> \system\ and its role-specific sub-folders

Note that default drawing, report, and template files are read from the environment's \system folder (or from the \template folder), but user-defined files are stored in the model's \attributes folder.

5.13 Image files

Tekla Structures uses image files in several places:

- In templates in drawings
- In drawing snapshots
- In component dialog boxes and thumbnails

- In drawing line types
- In the surface treatment dialog box
- In the **Master Drawing Catalog** for thumbnails and sample images
- In profile properties dialog boxes

The following image file formats are supported in Tekla Structures:

- In templates: bmp, gif, grd, jpg, ppm, pgm, rle, tiff and xkrl
- In drawing snapshots, and int thumbnail and sample images for the **Master Drawing Catalog**: png
- Other situations: bmp

See also

[Add images in a template \(page 326\)](#)

5.14 Log files

Tekla Structures writes information to log files when you, for example, number a model or save a model.

TIP All log files are located in the current model folder.

File	Description
analysis.log	Tekla Structures stores information in this file when you run the analysis. The file also contains information on the errors that occurred during load distribution.
check_database.log	Tekla Structures stores information in this file when you run the Repair command in File menu --> Diagnose & repair --> Model .
ClashCheck.log	Contains clashes found in the most recent clash check.
conflict.log	Contains conflicts that have occurred in the multi-user mode when more than a one user has modified an object.
drawing_cloning.log	Contains information on cloned drawings.
drawing_history.log	Contains information on drawing history. Use the advanced option XS_

File	Description
	DRAWING_HISTORY_LOG_TYPE to define the contents of the file.
dstv_nc.log	Each time you create NC files, Tekla Structures stores information in this file about the processed assemblies.
filetranerror.log	Used only for cold rolled components, such as Albion, Ayrshire, and Hispan. If the File Transfer components do not work as expected, Tekla Structures stores error messages in this file.
numberinghistory.txt	Contains full details of each numbering session carried out on the model. Each session is in a different block of the file.
save_history.log	Tekla Structures stores information in this file each time you save a model.
TeklaStructures.log	Contains information on the entire Tekla Structures session from opening the model to closing it. The file contains, for example, errors and information on which catalogs were used.
wizard.log	Tekla Structures stores information in this file when you run a drawing rule set (wizard) file. The file contains, for example, errors and number of drawings created.

See also

[View a log file \(page 279\)](#)

View a log file

The parts that are listed in a log file can be viewed in the model.

1. Open the model whose log history you want view.
2. On the **File** menu, click **Logs** and select a log file you want to see.
 - **Clash Check history log** (ClashCheck.log)
 - **Session history log** (TeklaStructures.log)
 - **Numbering history log** (numberinghistory.txt)
 - **Saving history log** (save_history.log)

- **Drawing history log** (`drawing_history.log`)
 - **Analysis history log** (`analysis.log`)
3. In the log file, select a row which contains a part or an assembly.
Parts and assemblies have the prefix `guid`.
Tekla Structures highlights the part in the model. If there are several parts or assemblies on a row and you select that row, Tekla Structures highlights all the parts in the model. You can also select parts on different rows.
 4. If you want to view the log files in a viewer that has been associated with the file type, for example, in Microsoft Notepad, on the **File** menu click **Logs** and select **View with the default application**.

TIP You can access a part's or an assembly's pop-up menu from the log file by right-clicking a row that contains a part or an assembly. Tekla Structures displays the same pop-up menu as when you right-click a part or an assembly in the model.

See also

[Log files \(page 278\)](#)

[Change the name and location of session history log file \(page 280\)](#)

[Numbering history log file \(page 281\)](#)

Change the name and location of session history log file

You can change the name and location of the session history log file (`TeklaStructures.log`). Do not change these settings if you are not an administrator.

1. Open a suitable [initialization file \(page 226\)](#) for editing.
For example, `user.ini` or `company.ini`.
2. To change the **name** of the session history log file, add the following line to the initialization file:

```
set XS_LOG_FILE_NAME=<name of the file>
```


For example:

```
set XS_LOG_FILE_NAME=sessionhistory.log
```


The default name is `TeklaStructures.log`.
3. To change the **location** of the session history log file, add the following line to the initialization file:


```
set XS_LOGPATH=<location of the file>
```

The default location is `..\Users\<user>\AppData\Local\Trimble\TeklaStructures\<version>`

4. Save the initialization file.
5. Restart Tekla Structures for the changes to take effect.

See also

[Log files \(page 278\)](#)

[View a log file \(page 279\)](#)

Numbering history log file

The `numberinghistory.txt` log file contains full details of each numbering session carried out on the model. Each numbering session is in a different block of the file.

NOTE If you remove or delete the `numberinghistory.txt` log file, Tekla Structures generates a new file with the same name next time when you run numbering. The new file does not contain a history of previous numbering sessions.

Example

Below is an example of the contents of a `numberinghistory.txt` log file.

```
① *** Numbering (haka): Thu Jun 14 13:08:08 2012
② Modified numbering
③ Compare modified to old parts
④ Compare new to old parts
④ Check for standard parts
  Use old numbers
⑤ Tolerance: 1.000000
  SteelTolerance: 1.000000
  ConcreteTolerance: 2.000000
  RebarTolerance: 2.000000
⑥ Part      guid: ID510F595D-0000-0017-3133-353939383237  series:Concrete_C-1/1  Concrete_C-1/0 -> Concrete_C-1/1
  Assembly guid: ID510F595D-0000-0016-3133-353939383237  series:C/1  C/0 -> C/1
*** Operation finished Thu Jun 14 13:08:08 2012
```

1	User name, date and time of the numbering.
2	<div>Numbering method.</div> <ul style="list-style-type: none">• Modified numbering is displayed when you run the Number modified objects command.• Modified numbering for selected series is displayed when you run the Number series of selected objects command.• Diagnose & Repair Numbering: All is displayed when you run the Diagnose & repair numbering: All command.

	<ul style="list-style-type: none"> • Diagnose & Repair Numbering: Series of selected objects is displayed when you run the Diagnose & repair numbering: Series of selected objects command. • Renumber all is displayed when you select the Renumber all option in the Numbering Setup dialog box.
3	<p>Some Compare options set in the Numbering Setup dialog box are displayed in the <code>numbering.history</code> log file only if they are set differently than the default value:</p> <ul style="list-style-type: none"> • <code>Compare modified to old parts</code> • <code>Compare new to old part</code> • <code>No holes comparing</code> • <code>No part name comparing</code> • <code>Beam orientation</code> • <code>Column orientation</code> <p>Some Compare options are not displayed at all:</p> <ul style="list-style-type: none"> • Reinforcing bars • Embedded objects • Surface treatment
4	<p>Numbering options.</p> <ul style="list-style-type: none"> • <code>Use old numbers</code> is displayed only when you have selected the Re-use old numbers option in the Numbering Setup dialog box. • <code>Check for standard parts</code> is displayed only when you have selected the Check for standard parts option in the Numbering Setup dialog box.
5	Tolerances are set in the Numbering Setup dialog box.
6	Changes in the position numbers and in the numbering series during one numbering session.
	<p>In addition:</p> <p>If a numbering series overlaps another, the errors are written to the log file.</p>

See also

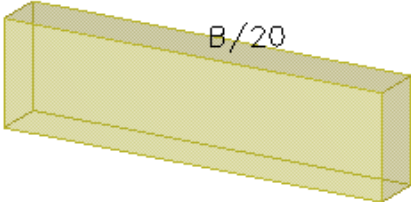
[Numbering series in the numbering history log file \(page 282\)](#)

Numbering series in the numbering history log file

Tekla Structures lists information on the numbered parts and assemblies in the `numberinghistory.txt` log file.

Example 1

The numberinghistory.txt log after one concrete beam **B/20** has been created and numbered:



Concrete Beam Properties

Save Load standard Save as standard

Attributes Position Cast unit Deforming

Numbering series

☒ Prefix: B ☒ Start number: 20

☒ Cast unit type: Precast

1 Part

guid: ID510F595D-0000-0030-3133-353939383335 series:Concrete_B-20/1 Concrete_B-20/0 -> Concrete_B-20/1

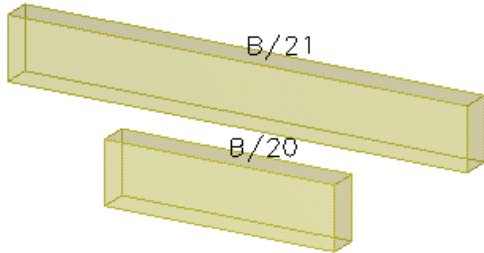
2 Assembly

guid: ID510F595D-0000-002F-3133-353939383335 series:B/20 B/0 -> B/20

1	<div>Part position number.</div> <ul style="list-style-type: none">The part with the GUID ID510F595D-0000-0030-3133-353939383335 is a part of the numbering series Concrete_B-20/1.The part becomes the first part in the numbering series: Concrete_B-20/0 -> Concrete_B-20/1.
2	<div>Assembly position number.</div> <ul style="list-style-type: none">The assembly ID of the part is ID510F595D-0000-002F-3133-353939383335.The part belongs to the B/20 assembly numbering series, which is also the cast unit numbering series.The part gets the assembly position number: B/20: B/0 -> B/20.

Example 2

The numberinghistory.txt log after another concrete beam **B/21** has been created and numbered:



Concrete Beam Properties

Save Load standard Save as standard

Attributes Position Cast unit Deforming

Numbering series

☒ Prefix: B ☒ Start number: 20

☒ Cast unit type: Precast

① Part guid: ID510F595D-0000-0030-3133-353939383335 series:Concrete_B-20/1 Concrete_B-20/0 -> Concrete_B-20/2
 ② Assembly guid: ID510F595D-0000-002F-3133-353939383335 series:B/20 B/0 -> B/21

1	<p>Part position number of the new part.</p> <ul style="list-style-type: none"> The part with the ID ID510F595D-0000-0030-3133-353939383335 is part of the numbering series Concrete_B-20/1. The part becomes the second part in the numbering series: Concrete_B-20/0 -> Concrete_B-20/2.
2	<p>Assembly position number.</p> <ul style="list-style-type: none"> The assembly ID of the part is ID510F595D-0000-002F-3133-353939383335. The part belongs to the B/20 assembly numbering series, which is also the cast unit numbering series. The part gets the assembly position number: B/20 B/0 -> B/21.

See also

[Numbering history log file \(page 281\)](#)

5.15 Model folder files and file name extensions

The following table lists the folders, files and file name extensions of files located in a Tekla Structures model folder.

Files in the Tekla Structures model folder

File or file name extension	Description
.db1	Model database
.db2	Numbering database
environment.db	Database for user-defined attribute definitions
xslib.db1	Contains information on user-defined connections and details, and default component descriptions.
.idrm	Mapping file, which handles IDs. Do not modify.
xslib.db2	Contains numbering information.
options_model.db and options_drawings.db	Contain values for model-specific options from the Options dialog box

File or file name extension	Description
	and values for model-specific advanced options from the Advanced Options dialog box. When a model is created, Tekla Structures reads model-specific options and advanced options values from the <code>standard.opt</code> file and <code>.ini</code> files in the environment folders and saves them in these two databases.
<code>history.db</code>	Model history database for Tekla Model Sharing and multi-user models.
<code>xsdb.xs</code>	File used for displaying the name of the model in the Open dialog box.
<code>xs_user.<username></code>	<p>Contains interface settings specified by the user.</p> <p>Each time a model is saved, an <code>xs_user.<username></code> file is created or updated. These settings are user specific. If the <code>xs_user.<username></code> file is not found in the model folder when you open the model, Tekla Structures searches for the <code>xs_user.default</code> file in the following folder search order: model, model\attributes, project, XS_FIRM\attributes, system. If this file is not found, Tekla Structures default settings will be used.</p> <p>This file contains settings for many of the options in the Options dialog box and the settings for the icons on the Selecting and Snapping toolbars.</p>
<code>save_history.log</code>	Tekla Structures stores the information in this file each time the model is saved. The file includes the saving time, date and information on any conflicts during saving.
<code>notification_report.xsr</code>	File used for displaying a notification report of assignments when you open a model.
<code>TeklaStructuresModel.xml</code>	Contains information on the Tekla Structures session, for example on

File or file name extension	Description
	opening, closing and what catalogs are being used.
dotlog.txt	A log file that contains information on Tekla Open API application use.
.locked	A temporary file that locks the model folder files to prevent modifications while the model is in use.
.bak	A backup copy of the model database.
assert.txt	A log file that contains information on assertion errors.
ClashCheck.txt	A log file that contains information on clashes found in the most recent clash check and the date and time of the clash check.
ClashCheck.history	A file that contains information on all clashes found in all clash checks and the dates and times of the clash checks.
wizard.txt	Tekla Structures stores information in this file when you run a drawing rule set (wizard) file. The file contains, for example, errors, number of drawings created, and information on which commands were used.
.lis	Different catalogs can be exported from and imported to different Tekla Structures models as .lis files. These include profile, material and bolt catalogs.
.tsc	Shapes can be exported from and imported to different Tekla Structures models as .tsc files.
.This_is_multiuser_model	Contains information about the PC running the Tekla Structures multi-user server. Do not alter or delete this file in normal circumstances. If you move a model to a different server, you should delete this file. Tekla Structures generates a new file with the same name.
ComponentCatalog.xml	Contains the model level catalog definitions of the Applications & components catalog.

File or file name extension	Description
<user>_ComponentCatalogUserSettings.xml	Lists the recently used applications and components, and their location in the Applications & components catalog structure.
Worktypes.xml	Lists available task types. Created when you start Task Manager .
WorkTypeProperties.xml	Lists allowed property types and their units.
.tmp	A file used to store temporary data.
.cnv	A file used to map Tekla Structures profile and material names with names used in other software.
.colorset	Created when you export a color set from Organizer .

Files in the \Analysis folder

File or file name extension	Description
.ifc	The analysis model exported in IFC format.
.stp	The analysis model exported in CIS/2 format.
.map	A file used for debugging analysis models.
analysis_results.db5	Database for analysis load combination results.
.db6	Analysis model database.

Files in the \attributes folder

.rop	Reference object properties
.rop.more	Reference object user-defined attribute properties
.m10000017	FabTrol XML import properties
.m10000015	Import attribute properties
.ncf	NC file properties
.ExportIFC.MainDialog	IFC export properties
.m440000004	3D DWG/DXF export properties
.m440000003	3D DGN export properties
.m1000004	FEM export properties

.m10000011	CIS analysis model export properties
.m10000026	CIS manufacturing model export properties
.m1000007	CAD export properties
.m10000016	Cover sheet export properties
.SObjGrp	Model selection filter properties
.VObjGrp	Model view filter properties
.OrgObjGrp	Organizer filter properties
.PObjGrp	Object group filter properties
.grd	Grid properties
.grd.more	Grid user-defined attribute properties
.grdp	Grid line properties
.grdp.more	Grid line user-defined attribute properties
.mvi	<p>Model view properties that you have saved for the model.</p> <p>Default 3D, part, component, custom component, assembly, and cast unit view settings files need to be saved with names used in common environment:</p> <p>3D view: basic_view</p> <p>3D part view: part_basic_view</p> <p>Part front view: part_front_view</p> <p>Part top view: part_top_view</p> <p>Part end view: part_end_view</p> <p>Part perspective view: part_persp_view</p> <p>3D component view: joint_basic_view</p> <p>Component front view: joint_front_view</p> <p>Component top view: joint_top_view</p> <p>Component end view: joint_end_view</p> <p>Component perspective view: joint_persp_view</p> <p>Custom component front view: custom_object_editor_front_view</p>

	<p>Custom component top view: custom_object_editor_top_view</p> <p>Custom component end view: custom_object_editor_end_view</p> <p>Custom component perspective view: custom_object_editor_perspective_view</p> <p>3D assembly or cast unit view: assembly_basic_view</p> <p>Assembly or cast unit front view: assembly_front_view</p> <p>Assembly or cast unit top view: assembly_top_view</p> <p>Assembly or cast unit end view: assembly_end_view</p> <p>Assembly or cast unit back view: assembly_back_view</p> <p>Assembly or cast unit bottom view: assembly_bottom_view</p> <p>Assembly or cast unit perspective view: assembly_persp_view</p>
.gvi	Saved properties for creating views along grid lines
.rep	Object representation properties
.clm	Steel column properties
.clm.more	Steel column user-defined attribute properties
.prt	Steel beam properties
.prt.more	Steel beam user-defined attribute properties
.sb	Steel spiral beam properties
.sb.more	Steel spiral beam user-defined attribute properties
.crs	Orthogonal beam properties
.crs.more	Orthogonal beam user-defined attribute properties
.dia	Twin profile properties
.dia.more	Twin profile user-defined attribute properties

.cpl	Contour plate properties
.cpl.more	Contour plate user-defined attribute properties
.ips	Item properties
.ips.more	Item user-defined attribute properties
.cpf	Pad footing properties
.cpf.more	Pad footing user-defined attribute properties
.csf	Strip footing properties
.csf.more	Strip footing user-defined attribute properties
.ccl	Concrete column properties
.ccl.more	Concrete column user-defined attribute properties
.cbm	Concrete beam or concrete polybeam properties
.cbm.more	Concrete beam or concrete polybeam user-defined attribute properties
.csb	Concrete spiral beam properties
.csb.more	Concrete spiral beam user-defined attribute properties
.csl	Concrete slab properties
.csl.more	Concrete slab user-defined attribute properties
.cpn	Concrete panel properties
.cpn.more	Concrete panel user-defined attribute properties
.ipc	Concrete item properties
.ipc.more	Concrete item user-defined attribute properties
.rbr	Reinforcing bar properties
.rbr.more	Reinforcing bar user-defined attribute properties
.rbg	Reinforcing bar group properties
.rbg.more	Reinforcing bar group user-defined attribute properties
.rcu	Curved reinforcing bar group properties

.rci	Circular reinforcing bar group properties
.rbm	Reinforcement mesh properties
.rbm.more	Reinforcement mesh user-defined attribute properties
.rbs	Reinforcement strand pattern properties
.rbs.more	Reinforcement strand pattern user-defined attribute properties
.rsp	Reinforcement splice properties
.rsp.more	Reinforcement splice user-defined attribute properties
.rst	Rebar set properties
.rst.more	Rebar set user-defined attribute properties
.rst.zones	Rebar set spacing zone properties
.rst_pm	Rebar set property modifier properties
.rst_pm.more	Rebar set property modifier user-defined attribute properties
.rst_edm	Rebar set end detail modifier properties
.rst_sm	Rebar set splitter properties
.admodel	Analysis model properties
.admodel.more	Analysis model user-defined attribute properties
.lm1	Point load properties
.lm2	Line load properties
.lm3	Area load properties
.lm4	Uniform load properties
.m10000028	Wind load properties
.lm6	Temperature load properties
.lco	Load combination properties
.adnode	Analysis node properties
.adnode.more	Analysis node user-defined attribute properties
.prt_ad, .prt_design	File types associated with steel beam analysis property settings. .prt_ad contains information associated with the analysis part properties

	and <code>.prt_design</code> contains information associated with the actual steel beam design.
<code>.crs_ad, .crs_design</code>	File types associated with orthogonal steel beam analysis property settings. <code>.crs_ad</code> contains information associated with the analysis part properties and <code>.crs_design</code> contains information associated with orthogonal steel beam design.
<code>.clm_ad, .clm_design</code>	File types associated with steel column analysis property settings. <code>.clm_ad</code> contains information associated with the analysis part properties and <code>.clm_design</code> contains information associated with the actual steel column design.
<code>.dia_ad, .dia_design</code>	File types associated with steel twin profile analysis property settings. <code>.dia_ad</code> contains information associated with the analysis part properties and <code>.dia_design</code> contains information associated with actual twin profile design.
<code>.cpl_ad, .cpl_design</code>	File types associated with contour plate analysis property settings. <code>.cpl_ad</code> contains information associated with the analysis part properties and <code>.cpl_design</code> contains information associated with actual contour plate design.
<code>.cpf_ad, .cpf_design</code>	File types associated with pad footing analysis property settings. <code>.cpf_ad</code> contains information associated with the analysis part properties and <code>.cpf_design</code> contains information associated with the actual pad footing design.
<code>.csf_ad, .csf_design</code>	File types associated with strip footing analysis property settings. <code>.csf_ad</code> contains information associated with

	the analysis part properties and .csf_design contains information associated with the actual strip footing design.
.ccl_ad, .ccl_design	File types associated with concrete column analysis property settings. .ccl_ad contains information associated with the analysis part properties and .ccl_design contains information associated with the actual concrete column design.
.cbm_ad, .cbm_design	File types associated with concrete beam analysis property settings. .cbm_ad contains information associated with the analysis part properties and .cbm_design contains information associated with the actual concrete beam design.
.csl_ad, .csl_design	File types associated with concrete slab analysis property settings. .csl_ad contains information associated with the analysis part properties and .csl_design contains information associated with the actual slab design.
.cpn_ad, .cpn_design	File types associated with concrete panel analysis property settings. .cpl_ad contains information associated with the analysis part properties and .cpl_design contains information associated with the actual concrete panel design.
.srf	Surface treatment properties
.srf.more	User-defined surface treatment attribute properties
.srfo	Surface properties
.srfo.more	User-defined surface attribute properties
.cha	Edge chamfer properties

.cha.more	User-defined edge chamfer attribute properties
.scr	Bolt properties
.scr.more	User-defined bolt attribute properties
.wld	Weld properties
.wld.more	User-defined weld attribute properties
*.udwcs	User-defined weld cross sections (UserDefinedWeldCrossSections.udwcs)
.m1000009	Control number properties
.m1000010	Control number locking properties
.num	Numbering setup properties
.rpr	Report properties
.4d	Project status visualization properties
standard.opt	Settings are saved in <code>standard.opt</code> in the <code>\attributes</code> folder only when you save your own settings in the Options dialog box using Save . There is a <code>standard.opt</code> file in the environment folder that gives the initial values to be loaded when a model is created.

Component properties files in the \attributes folder

- Properties files for components available in the **Applications & components** catalog, for example `.j310000063` for **2L Splice (63)** component properties. These files are stored in the `attributes` folder under the model folder.

Object level drawing settings, saved in \attributes folder

File or file name extension	Description
.dpvt	Object level part properties
.dim	Object level dimension properties
.pm	Object level part mark properties
.jm	Object level connection mark properties
.sm	Object level bolt mark properties
.rm	Object level reinforcement mark properties

File or file name extension	Description
.mrms	Object level merged reinforcement mark properties
.pom	Pour object mark properties
.surfm	Object level surface treatment mark properties
.note	Object level associative note properties
.wls	Object level weld mark properties
.lev	Object level level mark properties
.rev	Object level revision mark properties
.drmsb	Object level reinforcement mesh properties
.drbr	Object level reinforcement properties
.po	Object level pour object properties
.sc	Object level bolt properties
.srf	Object level surface treatment properties
.dgr	Object level grid properties
.sbl	Object level symbol properties
.wls	Object level weld mark properties
.drtxt	Object level text properties
.gln	Object level line properties
.grt	Object level rectangle properties
.gci	Object level circle properties
.gar	Object level arc properties
.gpl	Object level polyline properties
.gpg	Object level polygon and cloud properties

View level drawing settings, saved in \attributes folder

File or file name extension	Description
.vi	View level view properties
.vi.copt	View level detailed object level settings
.vpm	View level part mark properties
.vsm	View level bolt mark properties
.vnpm	View level neighbor part mark properties

File or file name extension	Description
.vsurfm	View level surface treatment mark properties
.vjm	View level connection mark properties
.vrm	View level reinforcement mark properties
.vnrm	View level neighbor reinforcement mark properties
.vpom	View level pour object mark properties
.vp	View level part properties
.vs	View level bolt properties
.vnp	View level neighbor part properties
.vsurf	View level surface treatment properties
.vw	View level welding properties
.vr	View level reinforcement properties
.vnr	View level neighbor reinforcement properties
.vrmp	View level reference object properties
.vpo	View level pour object properties
.vg	View level grid properties
.vf	View level filter properties
.vnf	View level neighbor part filter properties

Files related to single-part drawings, drawing level properties, saved in \attributes folder

File or file name extension	Description
.wd	Single-part drawing properties
.wd.copt	Single-part drawing detailed object level settings
.wd.more	Single-part drawing user-defined attributes
.wdf	Single-part drawing filter properties
.wdnf	Single-part drawing neighbor part filter properties
.wdl	Single-part drawing layout properties
.wdl.more	Single-part drawing user-defined layout attributes

File or file name extension	Description
.wdv	Single-part drawing view properties
.wdv.more	Single-part drawing user-defined view attributes
.wdc	Single-part drawing section view properties
.wdc.more	Single-part drawing user-defined section view attributes
.wdd	Single-part drawing dimension properties
.wdd.more	Single-part drawing user-defined dimension attributes
.wdcd	Single-part drawing dimensioning properties
.wdcd more	Single-part drawing user-defined dimensioning attributes
.wpm	Single-part drawing part mark properties
.wsm	Single-part drawing bolt mark properties
.wnpm	Single-part drawing neighbor part mark properties
.wdsurfm	Single-part drawing surface treatment mark properties
.wdsurfm.more	Single-part drawing user-defined surface treatment mark attributes
.wjm	Single-part drawing connection mark properties
.wdp	Single-part drawing part properties
.wds	Single-part drawing bolt properties
.wds.more	Single-part drawing user-defined bolt attributes
.wdnp	Single-part drawing neighbor part properties
.wdnp.more	Single-part drawing user-defined neighbor part attributes
.wdsrf	Single-part drawing surface treatment properties
.wdsrf.more	Single-part drawing user-defined surface treatment attributes
.wdgr	Single-part drawing grid properties

File or file name extension	Description
.wdgr.more	Single-part drawing user-defined grid attributes
.wdr	Single-part drawing protection properties
.wdr.more	Single-part drawing user-defined protection attributes

Files related to assembly drawings, drawing level properties, saved in \attributes folder

File or file name extension	Description
.ad	Assembly drawing properties
.ad.more	Assembly drawing user-defined attributes
.adf	Assembly drawing filter properties
.adnf	Assembly drawing neighbor part filter properties
.adl	Assembly drawing layout properties
.adl.more	Assembly drawing user-defined layout attributes
.adv	Assembly drawing view properties
.adc	Assembly drawing section view properties
.add	Assembly drawing dimension properties
.add.more	Assembly drawing user-defined dimension attributes
.adcd	Assembly drawing dimensioning properties
.adcd.more	Assembly drawing user-defined dimensioning attributes
.apm	Assembly drawing part mark properties
.asm	Assembly drawing bolt mark properties
.anpm	Assembly drawing neighbor part mark properties
.adsurfm	Assembly drawing surface treatment mark properties
.adsurfm.more	Assembly drawing user-defined surface treatment mark attributes

File or file name extension	Description
.ajm	Assembly drawing connection mark properties
.adp	Assembly drawing part properties
.adp.more	Assembly drawing user-defined part attributes
.ads	Assembly drawing bolt properties
.adnp	Assembly drawing neighbor part properties
.adnp.more	Assembly drawing user-defined neighbor part attributes
.adsrf	Assembly drawing surface treatment properties
.adsrf.more	Assembly drawing user-defined surface treatment attributes
.adw	Assembly drawing welding properties
.adw.more	Assembly drawing user-defined welding attributes
.adgr	Assembly drawing grid properties
.adgr.more	Assembly drawing user-defined grid attributes
.adr	Assembly drawing protection properties

Files related to cast unit drawings, drawing level properties, saved in \attributes folder

File or file name extension	Description
.cud	Cast unit drawing properties
.cud.copt	Cast unit drawing detailed object level settings
.cud.more	Cast unit drawing user-defined attributes
.cudl	Cast unit drawing layout properties
.cudl.more	Cast unit drawing user-defined layout attributes
.cudv	Cast unit drawing view properties
.cudv.more	Cast unit drawing user-defined view attributes
.cudc	Cast unit drawing section view properties

File or file name extension	Description
.cudc.more	Cast unit drawing user-defined section view attributes
.cudd	Cast unit drawing dimension properties
.cudd.more	Cast unit drawing user-defined dimension attributes
.cuded	Cast unit drawing dimensioning properties
.cuded.more	Cast unit drawing user-defined dimensioning properties
.cupm	Cast unit drawing part mark properties
.cusp	Cast unit drawing bolt mark properties
.cunpm	Cast unit drawing neighbor part mark properties
.cudsurfm	Cast unit drawing surface treatment mark properties
.cudsurfm.more	Cast unit drawing user-defined surface treatment mark attributes
.cudrm	Cast unit drawing reinforcement mark properties
.cudrm.more	Cast unit drawing user-defined reinforcement mark attributes
.cudp	Cast unit drawing part properties
.cudp.more	Cast unit drawing user-defined part attributes
.cuds	Cast unit drawing bolt properties
.cuds.more	Cast unit drawing user-defined bolt attributes
.cudnp	Cast unit drawing neighbor part properties
.cudnp.more	Cast unit drawing user-defined neighbor part attributes
.cudsrf	Cast unit drawing surface treatment properties
.cudsrf.more	Cast unit drawing user-defined surface treatment attributes
.cudr	Cast unit drawing reinforcement properties

File or file name extension	Description
.cudr.more	Cast unit drawing user-defined reinforcement attributes
.cudw	Cast unit drawing welding properties
.cudw.more	Cast unit drawing user-defined welding attributes
.cudgr	Cast unit drawing grid properties
.cudgr.more	Cast unit drawing user-defined grid attributes
.cudrp	Cast unit drawing protection properties
.cudrp.more	Cast unit drawing user-defined protection attributes
.cuf	Cast unit drawing filter properties
.cunf	Cast unit drawing neighbor part filter properties

Files related to general arrangement drawings, drawing level properties, saved in \attributes folder

File or file name extension	Description
.gd	General arrangement drawing properties
.gd.copt	General arrangement drawing detailed object level settings
.gd.more	General arrangement drawing user-defined properties
.gdl	General arrangement drawing layout properties
.gdl.more	General arrangement drawing user-defined layout attributes
.gdv	General arrangement drawing view properties
.gdv.more	General arrangement drawing user-defined view attributes
.gdd	General arrangement drawing dimension properties
.gdd.more	General arrangement drawing user-defined dimension attributes
.gdcd	General arrangement drawing dimensioning properties

File or file name extension	Description
.gdcd.more	General arrangement drawing user-defined dimensioning attributes
.gpm	General arrangement drawing part mark properties
.gsm	General arrangement drawing bolt mark properties
.gnpm	General arrangement drawing neighbor part mark properties
.gdsurf	General arrangement drawing surface treatment mark properties
.gdsurf.more	General arrangement drawing user-defined surface treatment mark attributes
.gjm	General arrangement drawing connection mark properties
.gdrm	General arrangement drawing reinforcement mark properties
.gdrm.more	General arrangement drawing user-defined reinforcement mark attributes
.gnrm	General arrangement drawing neighbor reinforcement mark properties
.gpom	General arrangement drawing pour object mark properties
.gdp	General arrangement drawing part properties
.gdp.more	General arrangement drawing user-defined part attributes
.gds	General arrangement drawing bolt properties
.gds.more	General arrangement drawing user-defined bolt attributes
.gdn	General arrangement drawing neighbor part properties
.gdn.more	General arrangement drawing user-defined neighbor part attributes
.gdsrf	General arrangement drawing surface treatment properties
.gdw	General arrangement drawing welding properties

File or file name extension	Description
.gdw.more	General arrangement drawing user-defined welding attributes
.gdr	General arrangement drawing reinforcement properties
.gdr.more	General arrangement drawing user-defined reinforcement attributes
.gnr	General arrangement drawing neighbor reinforcement properties
.gpo	General arrangement drawing pour object properties
.gpbr	General arrangement drawing pour break properties
.gdrmp	General arrangement drawing reference object properties
.gdrmp.more	General arrangement drawing user-defined reference model attributes
.gdgr	General arrangement drawing grid properties
.gdgr.more	General arrangement drawing user-defined grid attributes
.gdrp	General arrangement drawing protection properties
.gdrp.more	General arrangement drawing user-defined protection attributes
.gdf	General arrangement drawing filter properties
.gdnf	General arrangement drawing neighbor part filter properties

Files related to multidrawings, drawing level properties, saved in \attributes folder

File or file name extension	Description
.md	Multidrawing properties
.md.more	Multidrawing user-defined attributes
.mdl	Multidrawing layout properties
.mdl.more	Multidrawing user-defined layout attributes
.mdr	Multidrawing protection properties
.mdr.more	Multidrawing user-defined protection attributes

Files common to all drawings, and files in the \drawings folder

File or file name extension	Description
.dg	Drawing files
.ldb	Drawing export layer properties
.ldr	Drawing link properties
.cs	Section symbol properties
.detail	Detail symbol properties
.fas	Text file properties
.fhl	Hyperlink properties
.dsf	Drawing selection filter properties. This file is saved when you select the Drawing --> Selection filter check box in the Filter or Selection Filter properties.
.GridsDimXml .ShapeDimXml .HolesDimXml .FilterDimXml .OverallDimXml .RecessesDimXml .SecPartsDimXml	Dimensioning rules
.dg.DPM	Drawing snapshot files created with the snapshot tool in \snapshots subfolder

Files related to IFC export in \IFC folder

File or file name extension	Description
.ifc	Exported IFC files

Files related to NC in the \DSTV_Profiles folder

File or file name extension	Description
.nc1	NC (numerical control) files

Files in the \ModelSharing folder

File or file name extension	Description
ModelSharingService.key	Key file that is needed to perform sharing in Tekla Model Sharing.

File or file name extension	Description
FileSharing.ini	File sharing settings in Tekla Model Sharing .
FileSharing.xml	File needed for file sharing in Tekla Model Sharing.

Files in the \ProjectOrganizer folder

File or file name extension	Description
.db	Created when Organizer is opened for the first time. Contains all property template and category information used in the model. The database name shows the version of the database, for example, ProjOrg000020.db.
.propertytemplate	Created when you export a property template from Organizer .
.category	Created when you export a category from Organizer .

Files related to reports in the \Reports folder

File or file name extension	Description
.xsr	Tekla Structures reports

Files in the \SessionFileRepository folder

File or file name extension	Description
Files in the SessionFileRepository folder	Backup copies of the files that are updated or deleted in Tekla Model Sharing read in.
SessionFile.db	Database for managing model folder files in Tekla Model Sharing .
.storage	Configuration file of SessionFile.db.

Files related to shapes in the \ShapeGeometries and \Shapes folders

File or file name extension	Description
.tez	Shape geometry descriptions in the \ShapeGeometries folder
.xml	
.xml	Shape descriptions in the Shapes folder

Files in the \screenshots folder

File or file name extension	Description
.png	Screenshot taken in Tekla Structures.

Files related to Unitechnik export in the \UT_files folder

File or file name extension	Description
.uni	Exported Unitechnik files

Files related to Web Viewer in the \PublicWeb folder

File or file name extension	Description
Model.xml	Web Viewer model in XML format
index.html	Index file for the Web Viewer model
Model.zsol	Contains information on solid objects in the Web Viewer model
Files in the css folder	Contains Cascading Style Sheet (CSS) files for the Web Viewer Model
Files in the dll folder	Contains dynamic link libraries (DLL) files for the Web Viewer model
Files in the help folder	Contains Web Viewer help and css files.
Files in the images folder	Contains image files used in Web Viewer

5.16 Check and change Tekla Structures file and folder locations in Directory browser

Directory browser is a tool that helps you to find and modify the location of the various Tekla Structures files and folders, and customize user settings.

NOTE Generally, only administrators should change these settings. If you change them yourself, and you are sharing the same model with other users, and your settings differ from those of the project, you will have problems. Also, adding or modifying files in some of these folders may require administrator rights.

To locate files and folders, and customize your Tekla Structures settings:

1. Click the **Applications & components** button  in the side pane to open the **Applications & components** catalog.

2. Click the arrow next to **Applications** to open the applications list.
3. Double-click **Directory browser**.

The **Directory browser** dialog box opens. You can check the most common folder paths, and customize the settings in your `user.ini` file, or in the user-specific or model-specific `options.ini` file.

4. Check the folder paths and change them if necessary by clicking the buttons on the left of the **Basic** tab.

If you click the **Project** or **Firm** button and you have not set your firm and project folder, Tekla Structures will prompt you to do so and add the folder path definition to your `user.ini` file.

5. Check the settings in the `user.ini` and `options.ini` files and change them if necessary by clicking the buttons on the right of the **Basic** tab.
6. Go to the **Advanced** tab and define the folder paths for additional folders that you may need to access, such as custom components and macros.

5.17 Folder search order

When you open a model, Tekla Structures searches for the associated files in specific folders in a set order.

It is important that you keep files in correct folders. Once Tekla Structures finds the associated files, it stops searching. This means that files that have the same name but are located lower down the search order are ignored.

The folder search order is:

Folder	Defined by
Current model	The open model
Project	Advanced option XS_PROJECT
Firm	Advanced option XS_FIRM
System	Advanced option XS_SYSTEM

Tekla Structures does not search for certain files in exactly this order. The exceptions are listed below.

The exceptions are:

File (type)	Search order
objects.inp (page 259)	<ul style="list-style-type: none"> • Model folder • Project folder (XS_PROJECT) • Firm folder (XS_FIRM)

File (type)	Search order
	<ul style="list-style-type: none"> • System folder (XS_SYSTEM) • inp folder (XS_INP)
privileges.inp	<ul style="list-style-type: none"> • Model folder • Project folder (XS_PROJECT) • Firm folder (XS_FIRM) • System folder (XS_SYSTEM) • inp folder (XS_INP)
.dat files (page 269)	System folder (XS_SYSTEM)
Templates (page 311)	<ul style="list-style-type: none"> • Folder containing your templates indicated by the advanced option XS_TEMPLATE_DIRECTORY • Model folder • Project folder (XS_PROJECT) • Firm folder (XS_FIRM) • Environment-specific system templates indicated by the advanced option XS_TEMPLATE_DIRECTORY_SYSTEM • System folder (XS_SYSTEM)
Catalogs	<p>Profile (page 146), bolt (page 205), material (page 138) and reinforcing bar catalogs:</p> <ul style="list-style-type: none"> • Model folder • Project folder (XS_PROJECT) • Firm folder (XS_FIRM) • Folder indicated by the advanced option XS_PROFDB <p>Shape catalog (page 200):</p> <ul style="list-style-type: none"> • Model folder • Project folder (XS_PROJECT) • Firm folder (XS_FIRM) • System folder (XS_SYSTEM) • Folder indicated by the advanced option XS_DEFAULT_BREP_PATH <p>Printer catalog:</p>

File (type)	Search order
	<ul style="list-style-type: none"> Model folder Project folder (XS_PROJECT) Firm folder (XS_FIRM) Folder indicated by the advanced option XS_DRIVER

WARNING Do not use the system folder to store customized files. That way you will avoid having problems or doing a lot of unnecessary work when you upgrade to a newer version of the software.

5.18 Location of certain files in hidden folders

When Tekla Structures is installed in the \Program Files folder the following settings files are located in hidden folders. You can see hidden folders if you turn them visible in Windows **Folder Options**.

WARNING You can always check the settings below. If you run into problems with the settings, ask your administrator or local support for assistance.

File	Location
analysis_design_config.inp	..\ProgramData\Tekla Structures\<version>\environments\<environment>\system
contentattributes.lst	..\ProgramData\Tekla Structures\<version>\environments\<environment>\template\settings
contentattributes_global.lst	..\Program Files\Tekla Structures\<version>\nt\TplEd\settings
contentattributes_userdefined.lst (in USImperial and Metric environments: contentattributes_customer.lst)	..\Program Files\Tekla Structures\<version>\nt\TplEd\settings
dimension_marks.sym	..\ProgramData\Tekla Structures\<version>\environments\common\symbols

File	Location
InquiryTool.config	..\ProgramData\Tekla Structures\<version>\environments\common\macros\modeling\InquiryToolAttributes
objects.inp	..\ProgramData\Tekla Structures\<version>\environments\common\inp
options.bin	..\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings
privileges.inp	..\ProgramData\Tekla Structures\<version>\environments\common\inp
product_finishes.dat	..\ProgramData\Tekla Structures\<version>\environments\common\system
rebar_config.inp	..\ProgramData\Tekla Structures\<version>\environments\<environment>\system
TeklaStructures.lin	..\ProgramData\Tekla Structures\<version>\environments\common\inp
teklastructures.minitoolbar.xml	..\Users\<user>\AppData\Local\Tekla Structures\<version>\UserSettings
TilePatternCatalog.dtd	..\ProgramData\Tekla Structures\<version>\environments\common\system
TilePatternCatalog.xml	..\ProgramData\Tekla Structures\<version>\environments\<environment>\system
user.ini	..\Users\<username>\AppData\Local\Tekla Structures\<version>\UserSettings\

6 Templates

Templates are descriptions of forms and tables that can be included in Tekla Structures. Templates are either graphical or textual. Graphical templates are inserted in drawing layouts as tables, text blocks, and drawing headers, for example. Textual templates are used for creating reports. The contents of the template fields are filled in by Tekla Structures at run time.

Tekla Structures includes a large number of standard templates you can use. Use Template Editor to modify existing templates, or create new ones to suit your needs. Graphical template definitions have the file name extension `.tpl`. Textual template definitions have the file name extension `.rpt`.


The ready-made templates in the default environment are located in the following folders:

Textual templates: `...\ProgramData\Tekla Structures\<version>\environments\default\system`

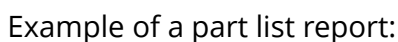
Graphical templates: `...\ProgramData\Tekla Structures\<version>\environments\default\template`

Examples

Example of a title block:

No	REV MARK	REVISION DESCRIPTION	CREATED	APPROVED	REV. DATE
<div></div>					
DRAWING TITLE		STANDARD			
CONTRACT		Trimble Solutions Corporation			
MODELLED BY		Dean Designer	ISSUED		
CONTRACT NO		1	SCALE 1:10		
DRAWING No		[C.1]	REVISION No. 2		
A2					

Example of an inquiry report:



For more information on using templates, see [Template Editor User's Guide](#) or open the Template Editor Help in Template Editor by clicking **Help** --> **Contents**.

See also

[Create a template \(page 313\)](#)

6.1 Create a template

1. On the **File** menu, click **Editors --> Template Editor**.
2. In Template Editor, click **File > New**.
3. Select the template type and click **OK**. A new empty template is created.
4. Add new rows in the template.
 - a. Click **Insert --> Component --> Row** to add a new row.
 - b. Select a content type for the row and click **OK**.
 - c. Repeat steps a–b for each new row.
5. Add value fields to get the required data from your Tekla Structures database.
 - a. Click **Insert --> Value field**.
 - b. Click a point to define the location of the field within the row.

The **Select Attribute** dialog box appears prompting you to select an attribute for the value field.
 - c. Select an attribute and click **OK**.
 - d. Repeat steps a–c for each value field.
6. Save the template.
 - a. Click **File --> Save as**.
 - b. Browse to the template folder `..\environment\<your_environment>\template`.
 - c. In the **File name** field, enter a name for the template.
 - d. Click **OK**.

See also

[Templates \(page 311\)](#)

[Create a template in HTML format \(page 313\)](#)

[Create a template for nested assemblies \(page 318\)](#)

[Create a template for bending schedules or pull-out pictures \(page 322\)](#)

[Add images in a template \(page 326\)](#)

6.2 Create a template in HTML format

Templates in HTML format give you more possibilities for different layout, fonts, and images. Templates that generate output in HTML format are graphical and have the file name extension *.html.rpt.

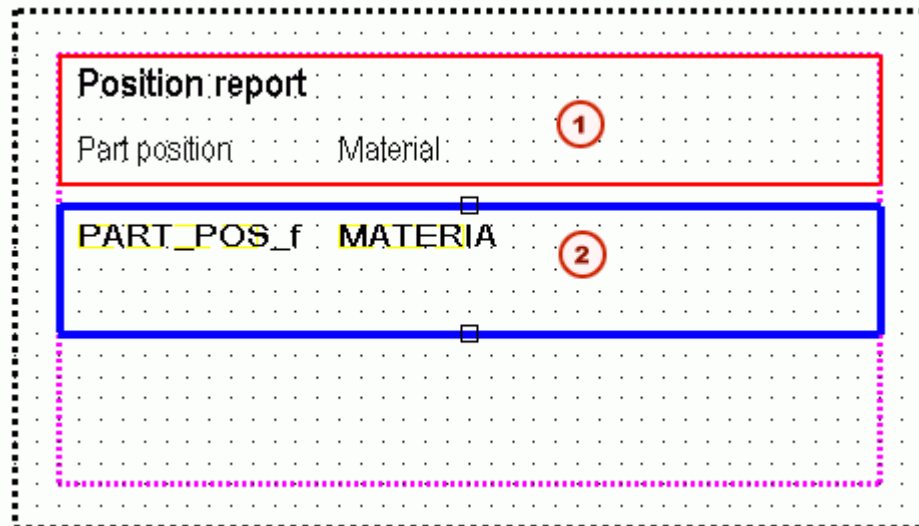
1. On the **File** menu, click **Editors --> Template Editor**.
2. In Template Editor, click **File > New**.
3. Select **Graphical template** and click **OK**.
4. Add new rows in the template.
 - a. Click **Insert --> Component --> Row** to add a new row.
 - b. Select a content type for the row and click **OK**.
 - c. Repeat steps a–b for each new row.
5. Add value fields to get the required data from your Tekla Structures database.
 - a. Click **Insert --> Value field**.
 - b. Click a point to define the location of the field within the row.

The **Select Attribute** dialog box appears prompting you to select an attribute for the value field.
 - c. Select an attribute and click **OK**.
 - d. Repeat steps a–c for each value field.
6. Add a header for each value field.
 - a. Click **Insert --> Component --> Header...**
 - b. Click **Insert --> Text...**
 - c. Enter a heading for the template, and then click **OK**.
 - d. Click a point to define the location of the heading in the header row.
 - e. Repeat steps a–d to create headings for all the value fields.
7. Save the template:
 - a. Click **File --> Save as**
 - b. Browse to the template folder `..\environment\<your_environment>\template`.
 - c. In the **File name** field, enter a name for the template.

Include the extension *.html.rpt in the file name. For example, `Part_list.html.rpt`.
 - d. Click **OK**.

NOTE If you add images in your HTML template, the images should be located in . .
\\Program Files\\Tekla Structures\\<version>\\nt\\TplEd\\bitmaps
folder, otherwise they are not shown in the HTML output.

Example



1. Header that contains text fields
2. Row that contains two value fields

See also

[Templates \(page 311\)](#)

[Add images in a template \(page 326\)](#)

6.3 Create a .pdf report template

You can create graphical templates to be used for .pdf reports.

1. On the **File** menu, select **Editors --> Template editor**.
2. Select **File --> New --> Graphical template**.
3. Click **Edit --> Properties**.
4. In **Template page properties** dialog box, set the page size to match the target page size (for example A4):

The size must match a size defined in the PaperSizesForDrawings.dat configuration file.

A0,	1189,	841
A1,	841,	594
A2,	594,	420
A3,	420,	297
A4,	297,	210
A5,	210,	148

5. Add new rows and value fields to get the required data from your Tekla Structures database. For more information about adding new rows and value fields, see [Create a template \(page 313\)](#).
6. Click **File --> Save as**, and save the report with the filename extension `.pdf.rpt`.
7. Copy the new template to your template folder, such as model or your company settings folder (XS_FIRM).

Now you can create a `.pdf` report using the new `.pdf` report template. For more information about creating a report, see [Create a report](#).

Example .pdf report

In this report example, the following page size is used:

Template Page Properties

Output
Width: 180 mm
Height: 255 mm

Workarea
View height: 127 mm

Margins
Top: 10 mm
Bottom: 10 mm
Left: 10 mm
Right: 0 mm










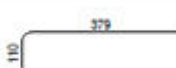

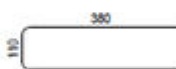

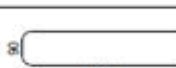

Information
Version: 3.21 | Created: 3.5.2004 13:23 | Free attributes...
Modified: 11.3.2016 15:36
Notes: Converted template

OK Cancel

Below is an example of a report that has been created using this particular report template. To open the report in a browser, click [here](#).

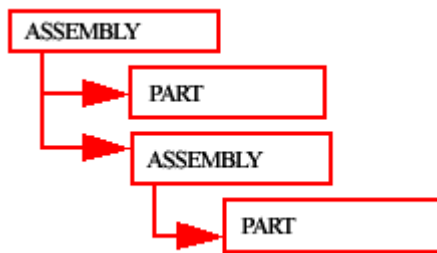
REBAR BENDING SCHEDULE

Project: Rebar fabrication 1

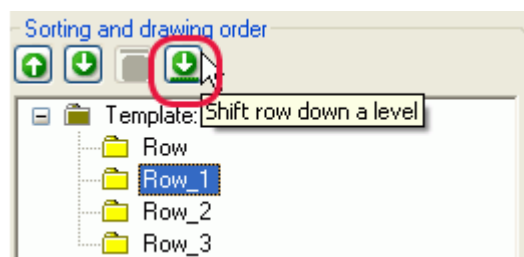
Pos	Diameter	Number	Grade	Length	Kg/p	Weight	Bending shape	Belongs to
WR/1	10	16	Undefined	800	0.49	7.9		W/4
WR/3	16	8	Undefined	7130	11.25	90.0		
WR/4	12	8	Undefined	3490	3.10	24.8		
WR/6	16	4	Undefined	7690	12.14	48.5		
WR/7	12	4	Undefined	4090	3.63	14.5		
WR/11	10	8	Undefined	950	0.59	4.7		W/3
WR/12	10	12	Undefined	2080	1.28	15.4		
WR/13	10	12	Undefined	2880	1.78	21.3		
WR/2	8	42	Undefined	830	0.33	13.8		W/3
WR/2	8	96	Undefined	830	0.33	31.5		W/4
WR/5	12	24	Undefined	980	0.87	20.9		
WR/8	6	14	Undefined	830	0.18	2.6		W/3
WR/9	6	22	Undefined	810	0.18	4.0		W/3
WR/10	8	78	Undefined	810	0.32	25.0		W/3
WR/10	8	184	Undefined	810	0.32	58.9		W/4
		Total:	532.0			Total:	383.7	

6.4 Create a template for nested assemblies

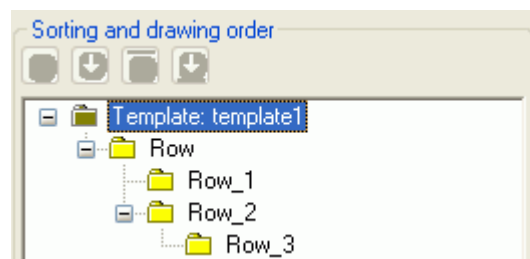
This example shows how to produce a template that displays the hierarchical structure of nested assemblies. You will create a nested assembly structure in a textual template similar to the one in the following picture:



1. On the **File** menu, click **Editors --> Template Editor**.
2. In Template Editor, click **File > New**.
3. Select **Textual template** and click **OK**.
4. Add four new rows in the template.
 - a. Click **Insert --> Component --> Row** to add a new row.
 - b. Select a content type for the row, and then click **OK**.
For the first and third row, select the **ASSEMBLY** content type, and for the second and fourth row, select the **PART** content type.
 - c. Repeat steps a–b for each new row.
5. Use the arrow buttons under **Sorting and drawing order** to create a nested assembly structure for the template.
 - a. Move the second and third row down one level.
 - b. Move the fourth row down two levels.



The structure should now look like this:



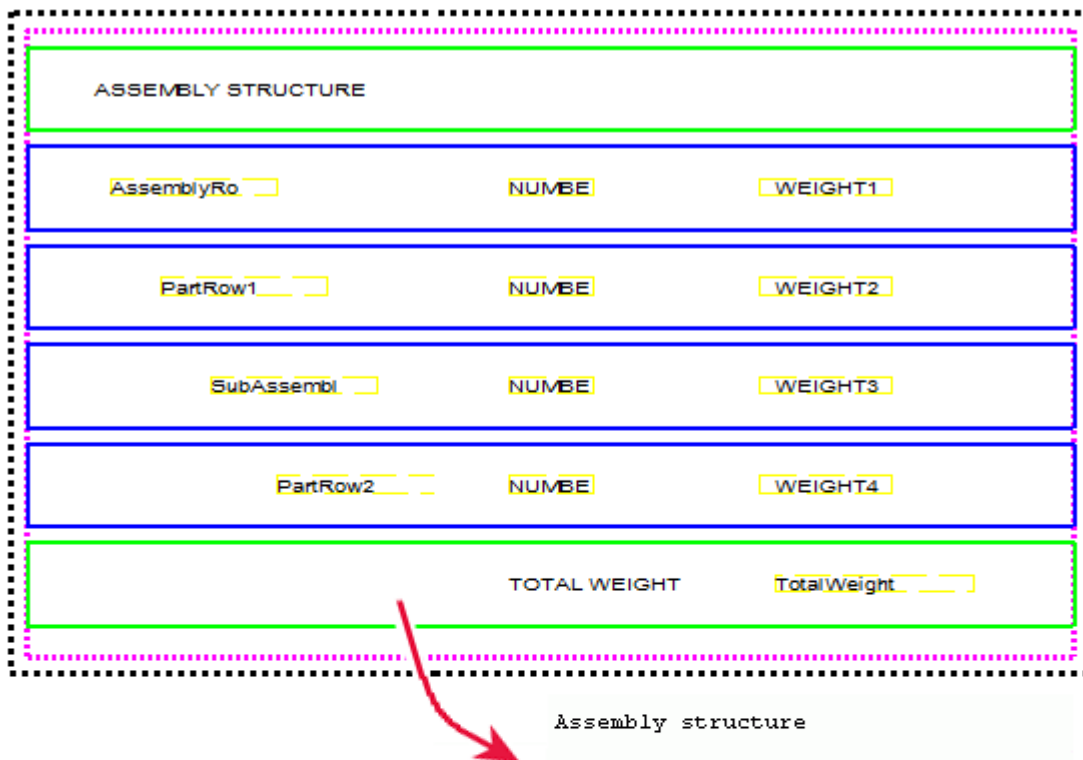
6. Add value fields to get the required data from your Tekla Structures database.

In this example, the added value fields are assembly or part position, number, and weight.

- a. Click **Insert --> Value field**.
 - b. Click a point to define the location of the field within the row.
The **Select Attribute** dialog box appears prompting you to select an attribute for the value field.
 - c. Select an attribute and click **OK**.
 - d. Repeat steps a–c for each value field.
7. Modify the layout of the template. For example:
 - a. Move objects to display the nested assembly structure in the printed report. To do this, select the object you want to move and drag it to the desired position.
 - b. Align objects. To do this, select all the objects you want to align, right-click and select the appropriate option from the pop-up menu, for example **Align --> Right**.
 - c. Add a header and a footer. To do this, click **Insert --> Component --> Page header** and **Page footer**. Add the required information to the header and footer.
 8. Save the template.

Example

Below is an example textual template and a report that has been created using the template:



TOP/1	1	677.5
SUBTRUSS/5	2	338.7
1001	2	3.6
1002	2	3.4
T/2	2	10.3
T/3	2	12.5
T/4	2	14.8
T/6	2	12.2
T/7	2	14.5
T/8	2	17.0
T/9	2	16.3
T/10	2	9.3
T/11	2	11.9
T/12	2	14.5
T/15	2	73.1
T/16	4	62.7
Total weight		677.5

NOTE You can create graphical templates for nested assemblies in the same manner as textual templates. The difference between graphical and textual templates is that in a graphical template you can display project and company information and graphics, such as table outlines, pictures, or symbols.

See also

[Templates \(page 311\)](#)

6.5 Create a template for bending schedules or pull-out pictures







You can use Template Editor for creating bending schedules or pull-outs pictures on reinforcement bars and bent meshes, and control the type of information that is shown in the bending schedules.

1. On the **File** menu, click **Editors --> Template Editor**.
2. Click **File --> New**.
3. Select **Graphical template** and click **OK**.
4. Click **Insert --> Component --> Row** to add a new row.
5. Select **REBAR** or **MESH** as the content type for the row.
6. Add value fields to get the required data from your Tekla Structures database.
 - a. Click **Insert --> Value field**.
 - b. Click a point to define the location of the field within the row.

The **Select Attribute** dialog box appears prompting you to select an attribute for the value field.
 - c. Select an attribute and click **OK**.
 - d. Repeat steps a–c for each value field.
7. Insert a graphical field to your **REBAR** or **MESH** content type row.
 - a. Click **Insert --> Graphical Field...**
 - b. Click and drag with the mouse to draw a frame.
8. Double-click the graphical field to open the **Graphical Field Properties** dialog box.
9. Click **Free attributes** and go to the **User** tab.
10. Add the required bending diagram attributes.

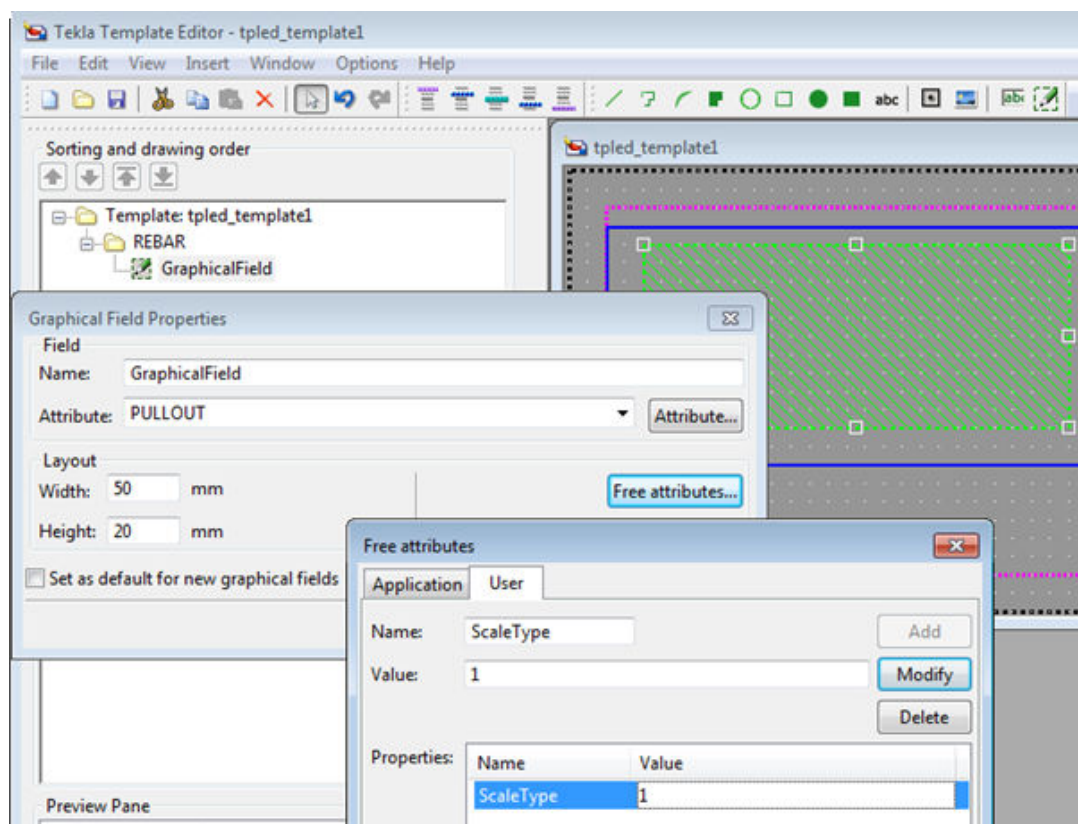
For a list of attributes and values that can be used for bending schedules in templates, see [Bending schedule attributes \(page 324\)](#).
11. Save the template.

Example

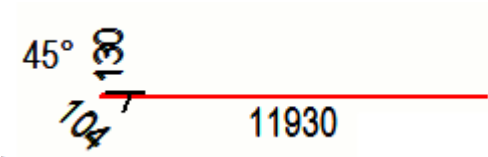
Rebar list				Project number Project name	1 Trimble	Date: 04/05/2016	
Position	Size	Quantity	Grade	Length (mm)	Weight (kg)	Weight/Tot	Pull-out picture
1	12	1	A500HW	2310.0	2.1	2.1	
3	12	1	A500HW	1030.0	0.9	0.9	
4	12	1	A500HW	1150.0	1.0	1.0	
7	12	1	A500HW	2540.0	2.3	2.3	
8	12	1	A500HW	1570.0	1.4	1.4	
9	12	1	A500HW	1700.0	1.5	1.5	

Autoscaling pull-out pictures

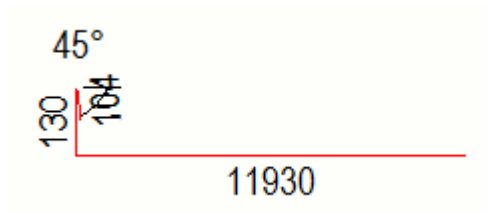
There is a free attribute available for the PULLOUT attribute in graphical templates that you can use to define the scale type. If you set the free attribute `ScaleType` to 1 on the **User** tab in the **Free attributes** dialog box, the pull-out pictures will be scaled to fit the available space in both X and Y dimensions. As a result, the shape becomes out of proportion, but small segments can be seen more easily.



A bending shape may look like this if you do not define the free attribute `ScaleType`:



The same bending shape that uses the free attribute `ScaleType` with value 1.



Change the appearance of the pull-out pictures

Tekla Structures uses the settings in the `rebar_config.inp` file in the `.. \ProgramData\Tekla Structures\<version>\environments \<environment>\system` folder to define the appearance of the pull-out pictures. You can change the colors, lines, and dimension unit, format, and precision used in pull-out pictures, for example. For a list of settings and values in `rebar_config.inp`, see Reinforcement settings for drawings (`rebar_config.inp`)

Bending schedule attributes

The following table lists the attributes and values that can be used for bending schedules in templates.

Attribute	Default value	Available values
FontName	romsim	Available template fonts
FontSize	2.0	Available font sizes
FontColor	1 (black)	1 = black 2 = red 3 = bright green 4 = blue 5 = cyan 6 = yellow 7 = magenta 8 = brown

Attribute	Default value	Available values
		9 = green 10 = dark blue 11 = forest green 12 = orange 13 = gray
RotationAxis	2	0 = by view 1 = by global Z 2 = by local axis
ScaleType	0	0 = no 1 = yes If you set the free attribute <code>ScaleType</code> to 1 for the <code>PULLOUT</code> attribute, the pull-out pictures will be scaled to fit the available space in both X and Y dimensions. As a result, the shape becomes out of proportion, but small segments can be seen more easily.
Exaggeration	1	0 = no 1 = yes
EndMark	1	1 = straight 2 = half arrow 3 = full arrow
Dimensions	1	0 = no 1 = yes
BendingRadius	0	Shows the bending radius in form of diameter of the bending roll. 0 = no 1 = yes
BendingAngle	1	0 = no 1 = yes

Attribute	Default value	Available values
ImageWidth	Width of the graphical field multiplied by 4.	Number of pixels
ImageHeight	Height of the graphical field multiplied by 4.	Number of pixels

See also

[Create a template for bending schedules or pull-out pictures \(page 322\)](#)

6.6 Add images in a template

You can add images in graphical templates. For example, you might want to include a company logo in your drawings. Tekla Structures supports the following image formats in graphical templates: .bmp, .jpg, .jpeg, .tif, .tiff and .png.

1. Open an existing graphical template or create a new graphical template in Template Editor.
2. Add a new row in the template:
 - a. Click **Insert --> Component --> Row** to add a new row.
 - b. Select a content type for the row and click **OK**.

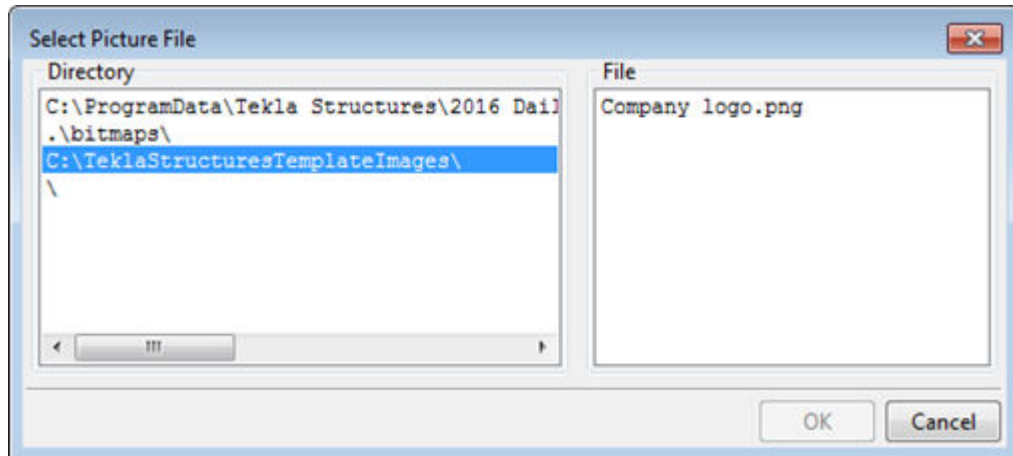
3. Ensure that you have the row selected, and click **Insert > Picture** to open the **Select Picture File** dialog box.

If a local symbols folder exists, the contents of that folder are shown by default. You can browse for the contents of the `common\symbols` folder by selecting that folder. If a local symbols folder does not exist, Tekla Structures displays the contents of the `common\symbols` folder.

4. If you have images in other folders, you can display these folders in the **Select Picture File** dialog box:
 - a. In Template Editor, click **Options --> Preferences**.
 - b. Go to the **File Locations** tab and on the **Symbols, pictures** row, add a new folder separated by a semicolon (;), for example:

Symbols, pictures (*) `\\.\.\.\common\symbols\;.\bitmaps\C:\TeklaStructuresTemplateImages\`

The folder you defined is displayed in the **Directory** list:



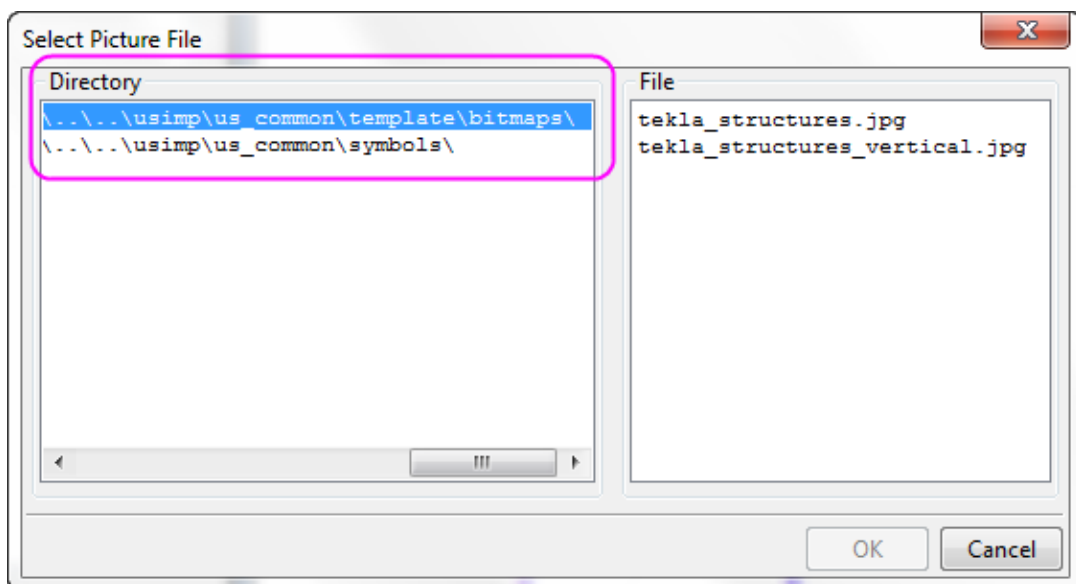
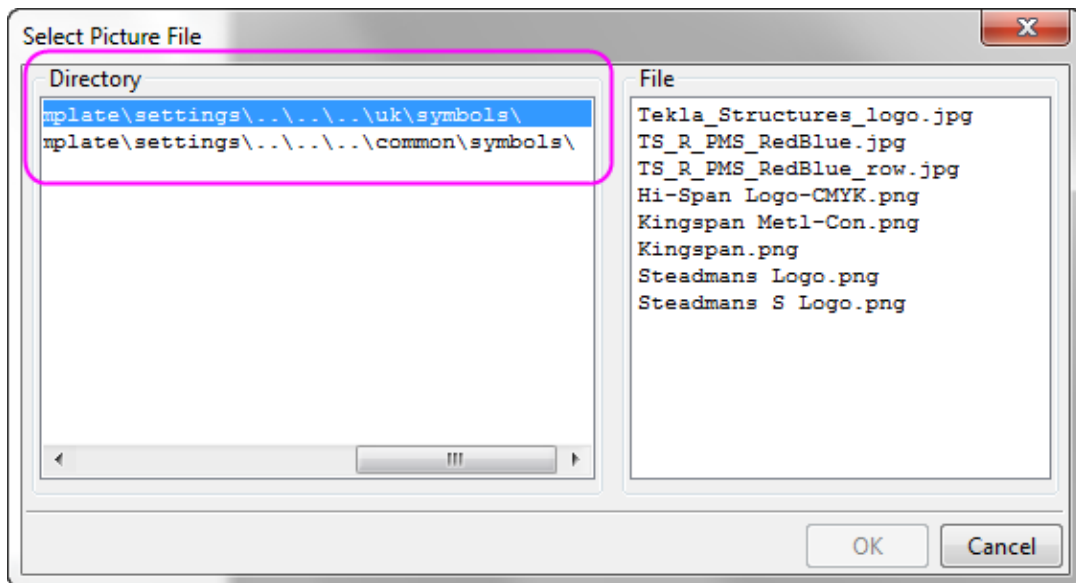
5. Select an image from the **File** list and click **OK** and add the image.
You can adjust the size by dragging from the image handles.

Things to remember when adding images in templates


- Do not add very large images because they update very slowly.
- The image may look different in the image editor and in the printout or in the exported DWG file.
- When you export the drawing to DWG, Tekla Structures copies the images in the same folder as the DWG file. If the image for some reason is not in the same folder, only the name of the image is displayed together with an empty frame instead of the image in the DWG.
- If environments have local symbols, the local symbol folder is also included in the search path with the `common\symbols` folder. If the local symbols folder contains files with the same name as `common\symbols` folder, then the local symbol file is used.
- When you open the drawing that contains images inserted in the template, Tekla Structures first looks for the images in the model folder and then in the `\symbols` folder in the current environment.
- You can define a folder where Tekla Structures always looks for images using the advanced option `DXK_SYMBOLPATH`. You can also define a firm folder for your images.

Example

Below are some examples of the **Select Picture File** dialog box showing folder structure in different environments.



In the following example, a company logo has been added in a template.

No	REV MARK	REVISION DESCRIPTION	REV. DATE
			
DRAWING TITLE		GA-drawing	
CONTRACT		Corporation	
MODELLED BY		ISSUE DATE	
CONTRACT NO		SCALE 1:50	
DRAWING No		REVISION No. 0	

See also

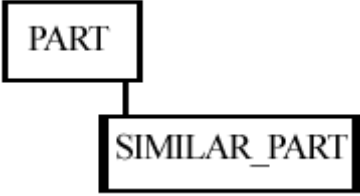
[Templates \(page 311\)](#)

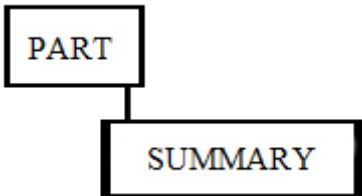
6.7 Content types

When you create a new row in the template, you must select a content type for the row. For example, when you add a row and then add a value field, Template Editor is asking for the content type. The content type determines which template attributes you can use on that row.

The available content types are:

Content type	Description
ANTIMATERIAL	Use to create lists of holes and recesses, or parts removed as a result of a cut. In Template Editor, the same attributes that are available for <code>PART</code> are available for <code>ANTIMATERIAL</code> . However, only the attributes that are useful to be used with <code>ANTIMATERIAL</code> are shown, including <code>NAME</code> , <code>LENGTH</code> , <code>WIDTH</code> , <code>HEIGHT</code> , <code>AREA</code> , <code>PROFILE</code> , and <code>NUMBER</code> , and user-defined attributes.
ASSEMBLY	Use to create lists of assemblies and single parts. Includes all assemblies containing the selected parts and bolts.
BOLT	Use to create screw and bolt lists. Includes all bolts connected to selected parts.
CAST_UNIT	Use to create lists of cast units.
CHAMFER	Use to create lists of the length of the chamfers.
COMMENT	Use to create empty rows or rows that only have textual data or lines anywhere on a template.
CONNECTION	Use to create lists of connections.
DRAWING	Use to create drawing lists without revision history information. Use for reports and included drawings.
HIERARCHIC_OBJECT	Use to create lists of various types of hierarchies. For example, lists hierarchical objects in Organizer.
HISTORY	Use to retrieve history information of the model. You can use this content type with <code>PART</code> , <code>REBAR</code> , <code>CONNECTION</code> and <code>DRAWING</code> rows. The following template attributes can be used with this content type:

Content type	Description
	<ul style="list-style-type: none"> • TYPE: the type of the historical action, for example update or numbering. • USER: the user who made the change. • TIME: the time the change was made. • COMMENT: the comment which was entered upon clicking Save. • REVISION_CODE: the revision code which was entered upon clicking Save.
HOLE	Use to create lists of holes.
LOAD	Use to create lists of loads.
LOADGROUP	Use to create lists of load groups.
MESH	Use to create lists of meshes.
NUT	Use to create lists of nuts. Contains all nuts for bolts associated with the selected parts.
PART	Use to create lists of parts.
POUR_BREAK	Use to create lists of pour breaks.
POUR_OBJECT	Use to create lists of pour objects.
POUR_UNIT	Use to create lists of pour units.
REBAR	Use to create lists of reinforcing bars.
REFERENCE_MODEL	Use to list the reference models.
REFERENCE_OBJECT	<p>Use to list the reference model objects in a reference model.</p> <p>Only reference model objects that have user-defined attributes are displayed in reports.</p>
REFERENCE_ASSEMBLY	Use to list the reference assemblies in a reference model.
REVISION	Use to create lists of revision marks.
SIMILAR_ASSEMBLY	<p>Use to create lists of similar parts.</p> <p>To use this content type, you need to have an empty (hidden in output) ASSEMBLY, PART or CAST_UNIT row in the row hierarchy above the row with SIMILAR_* content type:</p>  <pre> graph TD PART[PART] --- SIMILAR_PART[SIMILAR_PART] </pre>
SIMILAR_CAST_UNIT	
SIMILAR_PART	

Content type	Description
	<p>You cannot have any rows below <code>SIMILAR_*</code> row content type in the row hierarchy.</p> <p>Note: Used in drawings to collect similar object information from the model. All the other attribute information is collected from visible drawing objects.</p>
<code>SINGLE_REBAR</code>	<p>Use to create lists of individual bars in reinforcing bar groups.</p> <p>For example, use it to get the lengths of the individual bars in tapered reinforcing bar groups.</p> <p>For rebar sets, <code>SINGLE_REBAR</code> works in the same way as <code>REBAR</code>.</p>
<code>SINGLE_STRAND</code>	Use to create lists of individual prestressed strands.
<code>STRAND</code>	Use to create lists of prestressed strands.
<code>STUD</code>	Use to create lists of studs.
<code>SURFACE</code>	Use to create lists of surfaces.
<code>SURFACING</code>	Use to create lists of surface treatments.
<code>SUMMARY</code>	<p>Use to summarize the contents of the row(s) that are above <code>SUMMARY</code> in the hierarchy.</p>  <p>For example, use <code>PART - SUMMARY</code> hierarchy to summarize the contents of the <code>PART</code> rows.</p>
<code>TASK</code>	Use to create lists of tasks.
<code>WASHER</code>	Use to create lists of washers. Contains all washers for all bolts associated with the selected parts.
<code>WELD</code>	Use to create lists of welds.

See also

[Template attribute files \(contentattributes.lst\) \(page 331\)](#)

6.8 Template attribute files (contentattributes.lst)

Template attributes represent object properties. You can use template attributes in value fields, formulas, and row rules to get the required data from your Tekla Structures database.

When you output the template, Tekla Structures replaces the attribute with the actual value of the corresponding object property. For example, if you include the attribute `WEIGHT` in a report template, Tekla Structures displays the weight of the model object in the report.

Template attributes are defined in the following files:

File name	Description
<code>contentattributes.lst</code>	<p>This is a container file listing all the files that contain the actual attribute definitions. The files are added with <code>INCLUDE</code> sentences. The order of the files included in <code>contentattributes.lst</code> defines the reading order of the files.</p> <p>This file is overwritten in the installation when you install a newer version of Tekla Structures. Ensure that you make a copy of this file before updating.</p> <p>Generally, there is no need to modify <code>contentattributes.lst</code>. Do not modify it if you are not an administrator.</p>
<code>contentattributes_global.lst</code>	<p>This file contains attributes that are hard-coded into the program. Do not edit this file.</p>
<code>contentattributes_userdefined.lst</code>	<p>This file contains user-defined attributes, the same as in the <code>objects.inp</code> file.</p> <p>This file is overwritten in the installation when you install a newer version of Tekla Structures. To use your own attributes in templates and reports, create a copy of this file and add the necessary attributes to that file.</p>

By default, these files are located in `.. \Program Files\Tekla Structures \<version>\nt\TplEd\settings`, but the location may be different in your environment.

The search order for the `contentattributes.lst` file is the following:

1. Model folder
2. Project folder defined by `XS_PROJECT`
3. Firm folder defined by `XS_FIRM`
4. Folder defined by `XS_TPLED_INI`
5. Folder defined by `XS_TEMPLATE_DIRECTORY/settings`

See also

[User-defined template attributes \(page 333\)](#)

[Location of certain files in hidden folders \(page 309\)](#)

6.9 User-defined template attributes

User-defined template attributes are defined in the `contentattributes_userdefined.lst` file. By default, this file includes most of the user-defined attributes that are visible in the part properties dialog boxes. To use your own attributes in templates and reports, you should make a copy of the file, rename it appropriately, and add the necessary attributes to that file.

The `contentattributes_userdefined.lst` file is divided into two sections:

- A list of attribute names and default settings:

// Name	Datatype	Justify	Cacheable	Length
// XXXXX	FLOAT	RIGHT	TRUE	8
// -----				
axial1	FLOAT	RIGHT	TRUE	8
axial2	FLOAT	RIGHT	TRUE	8
BOLT_COMMENT	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_1	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_2	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_3	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_4	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_5	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_6	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_7	CHARACTER	LEFT	TRUE	64
BOLT_USERFIELD_8	CHARACTER	LEFT	TRUE	64
cambering	CHARACTER	LEFT	TRUE	64
CHECKED_BY	CHARACTER	LEFT	TRUE	20
CHECKED_DATE	CHARACTER	LEFT	TRUE	20
comment	CHARACTER	LEFT	TRUE	30
CONN_CODE_END1	CHARACTER	LEFT	TRUE	10
CONN_CODE_END2	CHARACTER	LEFT	TRUE	10
DRAWING_USERFIELD_1	CHARACTER	LEFT	TRUE	64
DRAWING_USERFIELD_2	CHARACTER	LEFT	TRUE	64
DRAWING_USERFIELD_3	CHARACTER	LEFT	TRUE	64
DRAWING_USERFIELD_4	CHARACTER	LEFT	TRUE	64

- A list of attributes assigned to content types:

①	PART	=	②	ASSEMBLY.MAINPART.USERDEFINED.	③	[Parameters]	④	comment
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		xs_shorten
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		cambering
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		PRELIM_MARK
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		OBJECT_LOCKED
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		fabricator
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		USER_FIELD_1
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		USER_FIELD_2
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		USER_FIELD_3
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		USER_FIELD_4
	PART	=		ASSEMBLY.MAINPART.USERDEFINED.		[Parameters]		USER_PHASE

1. The content type of the row in Template Editor
2. The attribute hierarchy in Template Editor
3. Customizable comments, such as the tab name in the user-defined attributes dialog box
4. The name of the user-defined attribute, must be the same as in the `objects.inp` file

See also

[Add user-defined template attributes to Template Editor \(page 334\)](#)

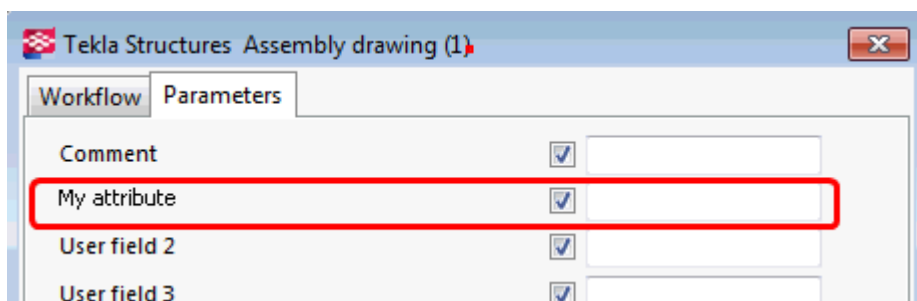
[Add comments to user-defined template attributes \(page 336\)](#)

[Add hierarchy to user-defined template attributes \(page 336\)](#)

Add user-defined template attributes to Template Editor

This example shows how to add your own user-defined attributes to the attribute tree in Template Editor.

Before you start, add your user-defined attribute to the `objects.inp` file. For example, you might add an attribute named `MY_ATTRIBUTE` to the user-defined properties of drawings.



1. Open the `contentattributes_userdefined.lst` file in a text editor.

2. Save the file with an appropriate name, for example `MY_contentattributes_userdefined.lst`, in the same folder.
3. Add `MY_ATTRIBUTE` to the list of attribute names and, define the settings as follows:

<code>MORTAR_WIDTH</code>	<code>FLOAT</code>	<code>RIGHT</code>	<code>TRUE</code>
<code>MY_ATTRIBUTE</code>	<code>CHARACTER</code>	<code>LEFT</code>	<code>TRUE</code>
<code>OBJECT_LOCKED</code>	<code>CHARACTER</code>	<code>LEFT</code>	<code>TRUE</code>

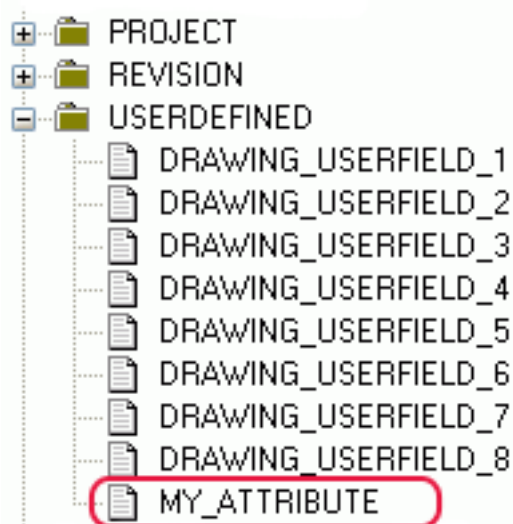
4. Add `MY_ATTRIBUTE` to the list of attributes assigned to content types.
Select the content type according to which object the attribute is associated to in the `objects.inp` file. In this example, the content type is `DRAWING`. Add the attribute in the format `USERDEFINED.<ATTRIBUTE_NAME>`.

```
// =====
//   Drawing attributes
//   _____
//   tab_page("DR_Parameters")
// =====
```

`DRAWING` = `USERDEFINED.MY_ATTRIBUTE`

5. Save the changes.
6. Open the `contentattributes.lst` file.
7. Add the following line in the file:
`[INCLUDE MY_contentattributes_userdefined.lst]`
8. Save the changes.

The attribute is shown in the attribute tree in Template Editor, under `DRAWING > USERDEFINED`:



See also

[User-defined template attributes \(page 333\)](#)

Add comments to user-defined template attributes

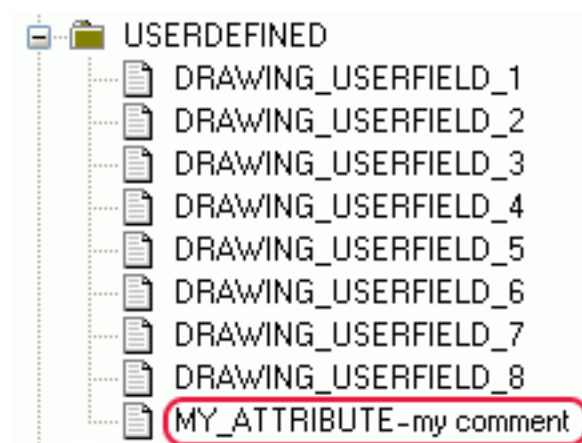
You can add your own comments to the user-defined attributes in the Template Editor attribute tree.

1. Open your copy of the `contentattributes_userdefined.lst` file.
For example, `MY_contentattributes_userdefined.lst`. Do not modify the original `contentattributes_userdefined.lst` file.
2. Scroll down to the list of attributes assigned to content types.
3. Add your comment inside quotation marks, after the attribute name.
For example:

```
DRAWING      = USER-DEFINED.MY_ATTRIBUTE "my comment"
```

4. Save the changes.

The comment you added is displayed in the attribute tree in Template Editor:



See also

[User-defined template attributes \(page 333\)](#)

Add hierarchy to user-defined template attributes

You can add your own hierarchy to the Template Editor attribute tree.

1. Open your copy of the `contentattributes_userdefined.lst` file.
For example, `MY_contentattributes_userdefined.lst`. Do not modify the original `contentattributes_userdefined.lst` file.
2. Scroll down to the list of attributes assigned to content types.
3. Define the hierarchy in square brackets, between `USERDEFINED.` and the attribute name.

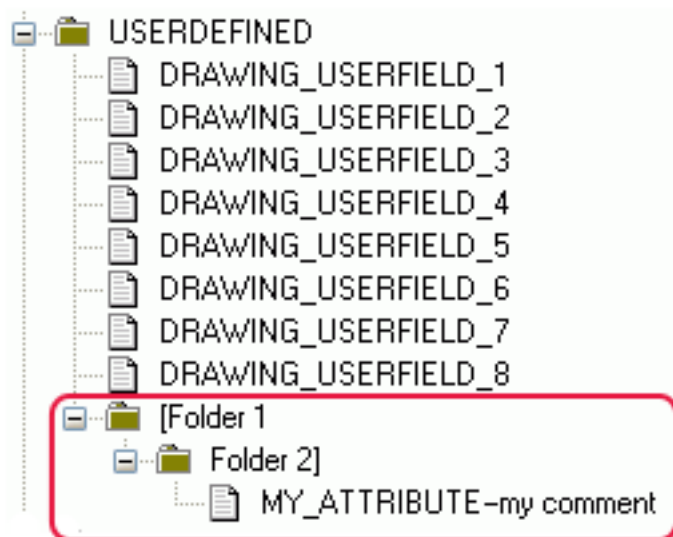
For example:

```
DRAWING = USERDEFINED.[Folder 1.Folder 2].MY_ATTRIBUTE "my comment"
```

NOTE Notice the periods after the brackets, and between the hierarchies.

4. Save the changes.

The new hierarchy is shown in the attribute tree:



WARNING User-defined attributes are case sensitive. Ensure that you enter the attribute name using the correct case for all characters.

See also

[User-defined template attributes \(page 333\)](#)

6.10 Tips for templates

There are some things that you might consider to be able to use templates more efficiently.

Click the links below to find out more:

- [Use text type attribute in calculations \(page 338\)](#)
- [Change value field content to use imperial units \(page 338\)](#)
- [Define customized date format \(page 339\)](#)
- [Assembly or cast unit drawing sheet number \(page 339\)](#)
- [Use format functions in value fields \(page 340\)](#)

Use text type attribute in calculations

Change text to numeric format

```
double (GetValue ("ASSEMBLY_TOP_LEVEL"))
```

Change into correct format for calculation (double=decimals)

```
format (double (GetValue ("ASSEMBLY_TOP_LEVEL")), "Length", "mm", 1)
```

Add all above into calculation formula

```
format (double (GetValue ("ASSEMBLY_TOP_LEVEL")), "Length", "mm", 1) + 15000
```

Another example of the same for part elevation

```
(double (GetValue ("TOP_LEVEL")) -  
(double (GetValue ("BOTTOM_LEVEL")))) * 1000
```

Change value field content to use imperial units

Advanced option to check if imperial units are in use:

```
GetValue ("ADVANCED_OPTION.XS_IMPERIAL") == 1
```

Translated string call for multi lingual text:

```
GetValue ("TranslatedText ("albl_Diameter_"))
```

Formatting of units:

```
format (GetValue ("DIAMETER"), "Length", "inch-fraction", 1/16)
```

```
format (GetValue ("DIAMETER"), "Length", "mm", 1)
```

Combine all above in a rule:

```

if GetValue("ADVANCED_OPTION.XS_IMPERIAL")==1 then
GetValue("TranslatedText("albl_Diameter_")")+
format(GetValue("DIAMETER"),"Length","inch-frac", 1/16) + "
Inches"
else
GetValue("TranslatedText("albl_Diameter_")")+
format(GetValue("DIAMETER"),"Length","mm", 1)+" mm"
endif

```

Define customized date format

Use mid function to find year, month and day:

```
mid("", "", "") string, offset, n
```

year:

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "6", "4")
```

month:

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "3", "2")
```

days:

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "0", "2")
```

Combine all above in rule:

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "6", "4")
+"-"+
```

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "3", "2")
+"-"+
```

```
mid(format(GetValue("DATE"),"Date","dd.mm.yyyy", ), "0", "2")
```

Assembly or cast unit drawing sheet number

Use match function to find "-" character

```
match(GetValue("NAME_BASE"), "*-*")
```

Use of mid function to return only characters after "-"

```
mid(GetValue("NAME_BASE"), (1+
(find(GetValue("NAME_BASE"), "-"))), 2)
```

Combine all above in rule

```
if (match(GetValue("NAME_BASE"), "*-*"))
```

```

then mid(GetValue("NAME_BASE"), (1+
(find(GetValue("NAME_BASE"), "-"))), 2)

else ""

endif

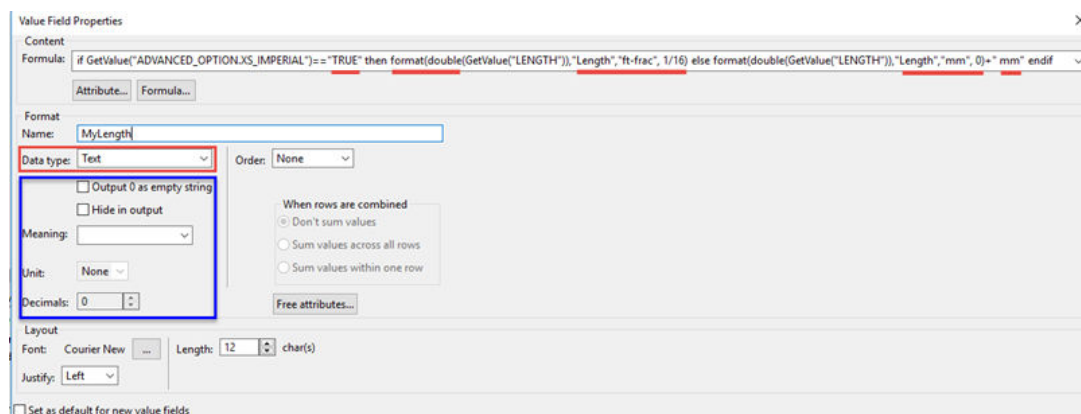
```

Use format functions in value fields

You can define the format used in a value field in two ways: In the **Value Field Properties** dialog box by filling in the fields for **Datatype**, **Meaning**, **Unit** and **Decimals**, or by creating a formula in the **Formula** field. In formulas, you can use the format function that converts an attribute value to a formatted information string.

When you use a format function in a formula, always set the **Datatype** to **Text** in the **Value Field Properties** dialog box. Leave the other fields in the **Format** area empty.

For example, if you want to convert the attribute value to numbers with decimals in the report, you need to include the conversion function `double` in the format function:



The default values for unit and decimals are defined in the `contentattributes_global.lst` file. The format function converts the attribute value to a formatted information string on the basis of what you have defined in the format function. The format function overrides the definitions in the `contentattributes_global.lst` file and settings that you have defined in the **Format** area of **Value Field Properties** dialog box.

Example of the result in a report when you use the formula above:

Mesh Information:

Geometry Size: 4/4-150/150-2750*2000

Length: 9'-1/4"

Height: 6'-6 3/4"

Example of the result of the formula, when you use set the advanced option XS_IMPERIAL to FALSE instead of TRUE:

Mesh Information:

Geometry Size: 4/4-150/150-2750*2000

Length: 2750 mm

Height: 2000 mm

For a list of valid unit and precision strings, see the `valuefieldclasses.lst` file located in the `..\Program Files\Tekla Structures\<version>\nt\TplEd\settings` folder. Do not make changes in this file. Below is an example of the file content, which may change between Tekla Structures versions.

```
//
-----
//
// - Use only letters, numbers, slashes and underlines.
//
//
-----
//
// Class                =          units { presicions }

Length                  =          mm, dm, cm, m, inch, ft, yd, inch-frac
{1/2, 1/4, 1/8, 1/16 }, ft-frac { 1/2, 1/4, 1/8, 1/16 }
Angle                   =          Degrees, radians
Area                    =          mm2, cm2, dm2, m2, sq.inch, sq.ft, sq.yd
Area/length             =          mm2/m, cm2/m, dm2/m, m2/m, in2/in, in2/ft,
ft, ft2/ft, sq.yd/ft
Volume                  =          mm3, cm3, dm3, m3, cu.in, cu.ft, cu.yd
Weight                  =          kg, T, N, lbf, kip
Weight/length           =          kg/m, T/m, N/m, daN/m, kN/m, lbf/ft
Density                  =          kg/m3, T/m3, N/m3, kN/m3, lbf/ft3
Temperature              =          Kelvin, Celsius, Fahrenheit
Section_modulus         =          mm3, cm3, in3
Moment_of_inertia       =          mm4, cm4, in4
Warping_modulus         =          mm6, cm6, in6
Force                   =          kg, T, N, daN, kN, lbf, kip
Force/length            =          kg/m, T/m, N/m, daN/m, kN/m, lbf/in, lbf/ft,
kip/in, kip/ft
Force/area              =          kg/m, kg/cm, kg/mm, T/m, T/cm, T/mm, N/m,
N/cm, N/mm, daN/m, daN/cm, daN/mm, kN/m, kN/cm, kN/mm, lbf/in, lbf/ft,
kip/in, kip/ft
Moment                  =          kgm, Tm, Nm, daNm, kNm, lbf-in, lbf-ft,
kip-in, kip-ft
Moment/length           =          kgm/m, Tm/m, Nm/m, daNm/m, kNm/m, lbf-ft/ft,
kip-ft/ft
Stress                  =          kg/m2, kg/cm2, kg/mm2, T/m2, T/cm2, T/
mm2, N/m2, N/cm2, N/mm2, daN/m2, daN/cm2, daN/mm2, kN/m2, kN/cm2, kN/mm2,
psi, psf, ksi, ksf
Date                    =          dd.mm.yyyy, mm.dd.yyyy, mm/dd/yyyy,
yyyy/mm/dd, dd-mm-yy, dd-mm-yy, yyyy-mm-dd, dd/mm/yy
Time                    =          hh:mm:ss, hh:mm:ss:am/pm
Date&Time               =          dd.mm.yyyy, mm.dd.yyyy, mm/dd/yyyy,
yyyy/mm/dd, dd-mm-yy, dd-mm-yyyy, yyyy-mm-dd, dd/mm/yy
Date_local              =          dd.mm.yyyy, mm.dd.yyyy, mm/dd/yyyy,
yyyy/mm/dd, dd-mm-yy, dd-mm-yyyy, yyyy-mm-dd, dd/mm/yy
Time_local              =          hh:mm:ss, hh:mm:ss:am/pm
```

```

Date&&Time_local      =      dd.mm.yyyy, mm.dd.yyyy, mm/dd/yyyy,
yyyy/mm/dd, dd-mm-yy, dd-mm-yyyy, yyyy-mm-dd, dd/mm/yyLeadingZeroes
LeadingZeroes
DistanceList          =      mm, dm, cm, m, inch, ft, yd, inch-frac
{1/2, 1/4, 1/8, 1/16 }, ft-frac { 1/2, 1/4, 1/8, 1/16 }

```

For more information about value fields, formats, format functions and other functions, see [Template Editor User's Guide](#).

7 Tekla Model Sharing and multi-user for administrators

7.1 Tekla Model Sharing

Tekla Model Sharing enables efficient global collaborative modeling within a shared Tekla Structures model. Tekla Model Sharing gives users the freedom to work with the same model at the same time in different locations and time zones.

In Tekla Model Sharing each user has a local version of the model on their computer, or on a network drive, and the model data is shared and synchronized over the Internet using a Microsoft Azure cloud sharing service. When a model is shared, it is connected to the cloud-based sharing service. You can check the status of the service at any time.

When a user starts to share a model, the organization the user belongs to gets the model ownership. In Tekla Model Sharing, an organization always owns all the models shared by the users in the organization. A shared model is always owned by only one organization. You can manage and view all the shared models owned by your organization with the web-based [Management Console for Tekla Model Sharing](#). Logging in requires Trimble Identity administrator rights.

Tekla Model Sharing requires a valid Tekla Model Sharing license and a Trimble Identity which is part of a valid organization. Based on the Trimble Identity information, you can assign and manage Tekla Model Sharing licenses in the web-based [Tekla Online Admin Tool](#). For more information, see [Managing Trimble Identities and Tekla Model Sharing licenses](#).

Tekla Model Sharing cloud sharing service status is publicly available at [Tekla Model Sharing Status](#). On this web-site, you can also find information about any service breaks.

For more information on how Tekla Model Sharing works, see

- What is Tekla Model Sharing
 - Prerequisites for Tekla Model Sharing
 - User roles in Tekla Model Sharing
 - Tekla Model Sharing licenses
 - [Manage models in Management Console for Tekla Model Sharing](#)
-

NOTE Tekla Model Sharing requires a single-user model. A model cannot be simultaneously shared and used in the multi-user mode. If you want to start using multi-user mode to share your model instead of Tekla Model Sharing, you first need to exclude your local version of the model from the sharing service and then convert it to a multi-user model.

The excluded model has no connection to the original shared model in the sharing service. This means that if you exclude your local version of the model from the sharing service and start to use the model in multi-user mode, you cannot later merge the original shared model and the multi-user model.

7.2 Multi-user models

You can work on Tekla Structures models in either single-user or multi-user mode. Multi-user mode allows several users to access the same model at the same time. Several users can work on the same project and be aware of the others' progress, so that copying and merging models is not needed.

The multi-user model consists of a single master model that can be located anywhere in the network. Each user can access this model, and open their own local view of the model on a client computer. This local view is called a working model. Any changes that a user makes to the working model are local, and not visible to other users, until the working model is saved to the master model.

The multi-user model is locked during opening, saving, and numbering. When one of the users performs any of these operations, other users cannot perform them during that time. For more information, see *How multi-user works*.

NOTE All users of the multi-user model should use the same settings and the same version and service pack of Tekla Structures.

Tekla Structures multi-user server runs as a service that is started automatically when you start the computer. You do not need to log in to the service. We recommend that you use the latest multi-user server version available regardless of the Tekla Structures version that you use.

Setting access rights to a multi-user model

You can protect user-defined attributes using privileges. You can also prevent your model and drawings from being accidentally modified by using the

Locked user-defined attribute (UDA). You can use the UDA for parts (separately for beams, columns, and so on), bolts, welds, specific drawing types, project properties, and phase properties.

Using the **Locked** UDA and privileges together you can even restrict some users or organizations from modifying your model. For more information on access rights, see Access rights in multi-user mode.

The **Locked** UDA has three values: **Yes**, **No**, and **Organization**. When set to **Yes**, the object is locked and you cannot modify its properties. You can only change the object's user-defined attributes that do not affect numbering. If you try to modify a locked object, Tekla Structures displays the following warning message:

```
There are locked objects, see report. The operation could not
be performed.
```

To add the lock attribute to the user interface, you need to add the following line in the object's section in the `objects.inp` file:

```
attribute("OBJECT_LOCKED", attribute("OBJECT_LOCKED",
"Locked:", option,"%s", none, none, "0.0", "0.0")
{
value("No", 1)
value("Yes", 0)
value("Organization", 0)
}
```

8 Model import

It is possible to import a model to an existing model by using the **Import model** command that is available from Tekla Structures version 2017 onwards. You can use the **Import model** command as a replacement to the old model dump import. You can import the updated model several times.

1. Open an empty Tekla Structures model created without a model template.
2. Go to **Quick Launch**, start typing `import model`, and select the **Import model** command from the list that appears.
3. Select a model folder to import to the currently open model.

The advanced option `XS_MODEL_IMPORT_LOCK_OBJECTS` in the **Import** category of the **Advanced Options** dialog box adds locks to objects, the default value is `TRUE`.

Notes and limitations

- It is not possible to import model to the same model. For example, create model and objects and save. Then copying the model and deleting half of the model and then importing this to the original model is not possible.
- If you import to an existing model, fix the possible numbering conflicts by adding prefixes in numbering series.
- When you import a model, all components are exploded in Tekla Structures version 2017i and earlier versions.

9 Attribute import

You can import user-defined attribute (UDA) values to a model from a text file. For example, you can import a list of manufactured or checked assemblies.

You can import the attribute values to Tekla Structures model objects, drawings or some reference model objects by selecting an area in the model, or the whole model.

The imported file can be:

- Exported from other software.
- Created manually using any standard text editor, for example, Microsoft Notepad.
- A simple Tekla Structures report containing the part GUIDs and user-defined attributes.

See also

[Import attributes \(page 347\)](#)

[Input files in attribute import \(page 348\)](#)

[Examples of input files used in attribute import \(page 349\)](#)

[Data file used in attribute import \(page 351\)](#)

[Attribute import settings \(page 351\)](#)

9.1 Import attributes

You can import user-defined attribute (UDA) values from a text file.

1. Copy the text file that you want to import to the current model folder.
2. If you want to import user-defined attributes to a selected area in the Tekla Structures model, select an area in the model.
3. On the **File** menu, click **Import** --> **Attributes** .

The **Import Attribute** dialog box opens.

4. Click the ... button next to the **Input file** box to browse for the file to be imported.
5. Select the delimiter used in the text file.
6. Select an option in the **Input scope**, **Create log file** and **Display log file** boxes.
7. Click **Create** to import the file.

See also

[Input files in attribute import \(page 348\)](#)

[Examples of input files used in attribute import \(page 349\)](#)

[Data file used in attribute import \(page 351\)](#)

[Attribute import settings \(page 351\)](#)

9.2 Input files in attribute import

Input files used in the import of user-defined attribute (UDA) values are text files, which are delimited by a comma, tab, semi-colon, space or a user-defined delimiter. The input files contain the names and values of the user-defined attributes to be imported to the Tekla Structures model.

In the input file, the column headings must contain the names of properties and user-defined attributes in model objects and drawings. The remaining lines contain the values of the properties and user-defined attributes.

You must include at least one key field as a column heading. Key fields are drawing or model object properties. Tekla Structures uses the key fields to identify the model objects or drawings to which the user-defined attributes are assigned.

The key fields for model objects are:

Key field	Example	Action
GUID	ID4FEAFC88-0000-0004-3133-343038303031	Tekla Structures assigns the user-defined attributes on this line in the input file to the model object that has a GUID value of ID4FEAFC88-0000-0004-3133-343038303031.
ASSEMBLY_POSITION or MARK	A3	Tekla Structures assigns the user-defined attributes on this line in the input file to the assembly that has an ASSEMBLY_POSITION value of A3. Repeat this line for each assembly you want to include.

Key field	Example	Action
PHASE	2	Tekla Structures assigns the user-defined attributes on this line in the input file to the assembly that has a PHASE value of 2. You must also use ASSEMBLY_POS as a key field with this option.

The key fields for drawing objects are:

Key field	Example	Action
TYPE NAME	A D4	Tekla Structures assigns the user-defined attributes on this line in the input file to the drawing that has a TYPE value of A and a MARK value of D4. Use both key fields in the input file.
ID	134	Tekla Structures assigns the user-defined attributes in this line in the input file to the drawing object that has an ID value of 134.

If you want to use user-defined attributes of other value types than the string in the input file, you need to define them in the `import_macro_data_types.dat` file, located in the `..\Tekla Structures\<version>\environments\common\system` folder.

TIP If you use Microsoft Excel to create the input file, save the file with the **Save as** command to **Text (Tab-delimited) (*.txt)** format.

See also

[Attribute import \(page 347\)](#)

[Import attributes \(page 347\)](#)

[Examples of input files used in attribute import \(page 349\)](#)

[Data file used in attribute import \(page 351\)](#)

[Attribute import settings \(page 351\)](#)

Examples of input files used in attribute import

Example input file for parts

ASSEMBLY_POS and PHASE are the key fields. Tekla Structures adds several user-defined attributes to the assemblies with values that match those listed in the ASSEMBLY_POS and PHASE columns.

For example, an assembly with the ASSEMBLY_POS (assembly number) of B5 in phase 1 gets the following user-defined attributes:

STATUS: 3

USER_PHASE: 6

USER_ISSUE: 3/25/2012

attributes.txt

ASSEMBLY_POS	PHASE	STATUS	USER_PHASE	USER_ISSUE
B1	1	7	3	3/25/2012
B2	1	7	3	3/25/2012
B3	1	7	3	3/25/2012
B4	1	7	3	3/25/2012
B5	1	3	6	3/25/2012
B1	1	3	5	3/26/2012
B2	2	3	4	3/26/2012

The input file contains several entries for B1. In this case, Tekla Structures writes the message **Duplicate entry in input file** in the log file and does not overwrite the user-defined attributes that are listed earlier in the file with those that are listed later. For example, at the end of the attribute import, B1 will have the following user-defined attributes:

STATUS: 7

USER_PHASE: 3

USER_ISSUE: 3/25/2012

This input file is tab-delimited. You can also use a comma, semi-colon, space or a user-defined delimiter.

Example input file for drawings

TYPE and NAME are the key fields. Tekla Structures adds a value for the user-defined attribute `User field 4` to drawings with values that match those listed in the TYPE and NAME columns.

For example, a drawing with the TYPE A (assembly drawing) and NAME B.2 gets the value 4 in the `User field 4`.

attributes.txt

TYPE	NAME	DRAWING_USERFIELD_4
A	B.1	3
A	B.2	4
A	C.1	1
A	C.2	2

See also

[Attribute import \(page 347\)](#)

[Import attributes \(page 347\)](#)

[Input files in attribute import \(page 348\)](#)

[Data file used in attribute import \(page 351\)](#)

[Attribute import settings \(page 351\)](#)

Data file used in attribute import

If you want to use user-defined attributes of other value types besides string in the attribute import input file, you need to define them in the `import_macro_data_types.dat` file, located in the `..\Tekla Structures\<version>\environments\common\system` folder.

The `import_macro_data_types.dat` file is a simple text file listing the user-defined attributes that you can include in an input file.

You can modify the file using any standard text editor, for example, Microsoft Notepad.

You can:

- Change any of the user-defined attributes that are not key fields.
- Add user-defined attributes as `INT`, `STRING`, `FLOAT`, or `DATE` value types.

The file contains the following columns:

`VARIABLE_NAME, VARIABLE_TYPE, CONVERSION_FACTOR, COMMENT`

NOTE Tekla Structures uses `CONVERSION_FACTOR` to convert imperial values to metric values. Tekla Structures only uses this value in Imperial environments. We recommend that you check the `FLOAT` values to avoid conversion factor errors.

Tekla Structures treats lines starting with double forward slash characters `//` as comments and ignores them when reading the file.

See also

[Attribute import \(page 347\)](#)

[Import attributes \(page 347\)](#)

[Input files in attribute import \(page 348\)](#)

[Examples of input files used in attribute import \(page 349\)](#)

[Attribute import settings \(page 351\)](#)

9.3 Attribute import settings

Use the options in the **Import Attribute** dialog box to define the input scope and log file properties when importing user-defined attribute (UDA) values from a text file to a model.

Option	Description
Input file delimiters	Select the delimiter used in the input file.
Input scope	<ul style="list-style-type: none">• Default, Entire model Tekla Structures assigns the user-defined attribute values of objects in the input file to matching objects in the model.• Selection only Tekla Structures only assigns the user-defined attribute values of objects in the input file to matching objects in the selected area of the model. Use this option to import user-defined attributes to models. Do not use it for drawings.• Reference models Tekla Structures assigns the user-defined attribute values of objects in the input file to matching objects in reference models.
Create log file	<ul style="list-style-type: none">• Create Creates a new log file named <code>attribute_import.log</code> in the current model folder each time you import the user-defined attributes. Any previous attribute import log files are overwritten.• Append Adds log entries to the <code>attribute_import.log</code> file in the current model folder each time you import the user-defined attributes. If the log file does not exist, Tekla Structures creates it.• No Does not create a log file.
Display log file	<ul style="list-style-type: none">• No The log file is not displayed.• On dialog Tekla Structures displays the log file in a separate window. Click an object GUID in the log file to highlight the part in the model.

See also

[Attribute import \(page 347\)](#)

[Import attributes \(page 347\)](#)

[Input files in attribute import \(page 348\)](#)

[Examples of input files used in attribute import \(page 349\)](#)

[Data file used in attribute import \(page 351\)](#)

10 Uninstall Tekla Structures

When you no longer need a version of Tekla Structures or related components, you can uninstall to save space on the computer.

Before you uninstall the license server, [deactivate the licenses \(page 83\)](#).

10.1 Uninstall Tekla Structures

Uninstall the Tekla Structures software and environments in the Windows **Control Panel**.

You can have many Tekla Structures versions on your computer. When you install and start using a new version, you do not need to uninstall the older versions.

When you no longer use a Tekla Structures version, you can uninstall it without affecting other installed Tekla Structures versions.

1. Go to the Windows **Control Panel** --> **Programs** --> **Programs and Features**.
2. Select a component, click **Uninstall** and follow the prompts. Follow this order:
 - a. Uninstall the service packs.
 - b. Uninstall the Tekla Structures environments.
When you uninstall an environment of a Tekla Structures software version you are still using, the uninstalled environment is not shown in the Tekla Structures setup dialog box anymore.
 - c. Uninstall the main Tekla Structures software.
 - d. If installed, uninstall the offline help package.
 - e. If needed, delete the additional files or extensions related to Tekla Structures manually from the installation folders.
3. If you no longer wish to run any version of Tekla Structures on the computer, uninstall the components that are not version-specific.

- a. The Tekla Warehouse service and content components.
- b. The Tekla Structures license borrowing tool.
[Return a borrowed Tekla Structures license \(page 114\)](#) before you uninstall the license borrowing tool.
- c. The Tekla Structures license administration tool.
- d. For uninstalling a Tekla Structures license server, see the instructions below.

10.2 Uninstall the license server

Follow the instructions below when you want to permanently remove the licensing server from this computer. If you are upgrading to a new version on the same computer, see [Update the Tekla Structures license server](#) instead.

1. Make sure that all [borrowed licenses are returned \(page 114\)](#). You can use LMTOOLS to check who has borrowed licenses.
2. [Deactivate Tekla Structures licenses \(page 83\)](#).

Deactivating releases the license so that the license can be later activated on another license server installation (applies even to licenses that have expired or updated to a new Tekla Structures version).

3. Go to the Windows **Services** snap-in and stop the Tekla Structures licensing service.

You can find the snap-in using the Windows start menu search.

4. Go to the Windows **Control Panel** --> **Programs** --> **Programs and Features**.
5. Select the Tekla Structures license server and click **Uninstall**.

If the license server uninstallation fails, uninstall the license server manually.

10.3 Uninstall the license server manually

Automatic Tekla Structures license server installation can normally be uninstalled from the Control Panel.

If the automatic uninstallation cannot be performed, like in the case of manual installation, you need to uninstall the license server manually.

Before you start license server uninstallation, stop FlexNet licensing services and other licensing services.

To manually uninstall the licensing server:

1. Make sure that all [borrowed licenses are returned \(page 114\)](#). You can use LMTOOLS to check who has borrowed licenses.
2. [Deactivate Tekla Structures licenses \(page 83\)](#).
Deactivating releases the license so that the license can be later activated on another license server installation (applies even to licenses that are updated to a new Tekla Structures version).
3. Go to **Tekla Structures Licensing** --> **LMTOOLS** through the **Start** menu or **Start screen**, depending on your Windows operating system.
4. Go to the **Service/License File tab**, select **Configuration using Services**, and ensure that **Tekla Structures Licensing Service** is selected in the list.
5. Go to the **Start/Stop/Reread** tab and click **Stop Server** to stop the license server.
6. Go to the **Config Services** tab, ensure that **Tekla Structures Licensing Service** is shown in the **Service name** box and then click **Remove Service**.
7. At the command prompt, enter the following command:
`uninstallanchorservice.exe`
8. Uninstall Tekla Structures license server from the Control Panel to complete the uninstallation.

The Tekla Structures license server is uninstalled.

11 Develop applications using Tekla Open API

You can develop your own applications and additional features for Tekla Structures through the Tekla Open API (Application Programming Interface). Tekla Open API is implemented using Microsoft .NET technology.

Applications that are developed using Tekla Open API to work with Tekla Structures are called *extensions*. To use the power of the Tekla Open API, you must write program code outside Tekla Structures. If you do not know how to program, you can still benefit from the Tekla Open API by downloading extensions created by others from [Tekla Warehouse](#).

With Tekla Open API you can:

- Record and run user interface actions
By recording and running user interface actions you can automate routine tasks, such as creating daily reports.
- Create automation tools
You can create automation tools for frequently needed objects. With automation tools you can, for example, create basic structures or add typical details to drawings.
- Integrate Tekla Structures to other software
You can utilize the Tekla Open API and .NET in transferring information between Tekla Structures and other software, such as Analysis & Design software.
- Create new functionality.

For more information on Tekla Open API and extensions, visit the [Tekla Developer Center](#).

12 Disclaimer

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