

 **BIM Manager's
Start-up Guide**
Tekla Structures 2021



www.trimble.com

TRANSFORMING THE WAY THE WORLD WORKS



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Recommended additional reading

- Tekla online services landing page <http://www.tekla.com/services>
- Trimble Identity for online services
https://teklastructures.support.tekla.com/not-version-specific/en/trimble_identity_faq
- Tekla Structures Installation Guide
https://teklastructures.support.tekla.com/2021/en/ins_about_tekla_structures_installation
- Tekla Structures licensing system
https://teklastructures.support.tekla.com/2021/en/file_flexnet_licensing_system
- Tekla Structures Hardware recommendations 2021
https://teklastructures.support.tekla.com/2021/en/ins_tekla_structures_hardware_recommendations
- Administrator's Release Notes 2021
https://teklastructures.support.tekla.com/2021/en/admin_guide_tekla_structures_administrators_guide
- Centralized distribution of Tekla Structures
<https://teklastructures.support.tekla.com/support-articles/centralized-distribution-tekla-structures-2021s>

1. Introduction

This guide describes how to take Tekla Structures into use and how to customize it to meet the needs of your company and projects.

Tekla provides documentation on how Tekla Structures works and how it can be customized, see Tekla Structures Product Guides and Support Articles from TUA <https://teklastructures.support.tekla.com/>

1.1 Trimble Identity

You need a Trimble Identity to download Tekla Structures and to use your online licenses. The Trimble Identity is connected to a Tekla Online organization (a user group for your physical organization). Tekla Online services use Trimble Identity for identification. In addition to Tekla services, you can use your Trimble Identity with several other Trimble services, such as Trimble Connect and SketchUp 3D Warehouse.

Trimble Identity provides single-sign-on access for Tekla Online services. You can sign in one service and then browse to another online service without a need to log in again. Find the services landing page here:
<http://www.tekla.com/services>

Creating a Trimble Identity on your first license purchase

- If you did not have an existing Trimble Identity, Trimble sends you an email with an invitation to complete your account creation. Create your account using the link in the email and make sure you fill in all of the required user profile information.
- If you are a company's named contact, you are invited to your Tekla Online organization by Trimble when the organization is created in Tekla Online.
- You will receive an email to accept membership in your new Tekla Online organization. You are then responsible for managing the organization together with other administrators that you may assign. See [Managing Trimble Identities and Tekla Model Sharing licenses](#) for more information.

Creating a Trimble Identity to join an existing organization

- If you have received an email invitation from Trimble to create a Trimble Identity, follow the instructions in the email to create your account to ensure you have the correct access rights. Otherwise, [Click here](#) to create a new Trimble Identity.
- Complete the Create new account form and click the Create new account button. If you have several different email addresses, **use your company email address**.
- Look for a verification email in your inbox and click the link provided to **verify your account**. You must verify your account to access your Trimble Identity.
- Log in with your new account, fill in all the required user profile information, and click Save.
- If you didn't receive an invitation email to join your Tekla Online organization, you can do it in one of the following ways:
 - Switch to the Organization page on your user profile page, select an organization that you would like to join, and click Send request. If there are no organizations listed, it means your email address does not match with any existing organization's email address.
 - Ask your company's Trimble Identity administrator to invite you, and accept the invitation when it arrives via email or on your user profile pages at <https://account.tekla.com/>.
- Your Trimble Identity is now active, and you can install and license Tekla Structures.



Note: If you cannot find the email in your inbox, check your Spam / Junk email folder. See the [troubleshooting information](#) for more help in case there are problems.



Note: Membership in an organization can also affect your access to your organization's cloud-stored data, such as Tekla Model Sharing models. Make sure you do not switch between organizations unnecessarily. When available, use your company email address with your Trimble Identity.

Managing the Trimble Identities to join an existing organization

Tekla Online administrators manage the access of the organization's users to Tekla Online services and licenses. One or more people in your organization can be administrators. The first user is invited to your organization group by a Trimble representative and given administrator rights 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 group to allow them access to the following services:
 - Tekla Online licenses, which are licenses connected to a Trimble Identity login.
 - Tekla services and features that use Tekla Online licenses include Tekla Model Sharing, Tekla EPM, Trimble Connect, Tekla Structures Partner configuration, and Tekla Structures elearning courses.
- Tekla discussion forum
- Part of the content in Tekla User Assistance and Tekla Warehouse
- Removing people from your organization group when they no longer belong to your organization

See [Managing Trimble Identities and Tekla Model Sharing licenses](#) for more information.

1.2 Online Licensing

Tekla Structures cannot be used without a valid license. An online license is connected to your Trimble Identity. The license is delivered directly to the Tekla Online Admin tool, where you as the company's Tekla Online account administrator can assign the online licenses to individual users. When Tekla Structures starts, the end users log into Trimble's cloud to reserve the licenses.

Tekla Structures 2021 has online licensing available for the following configurations:

- **Diamond**
- **Graphite**
- **Carbon**
- **Educational** (Tekla Campus) - You get this license by registering at campus.tekla.com. Note that you are not allowed to use this configuration for commercial work.
- **Partner** - Your employer joins the Tekla Partners Program at developer.tekla.com. Once approved, your administrator can assign a license to you in the Tekla Online Admin Tool.
- **EPM Modeler** - This configuration is only available with [Tekla PowerFab](#).

See more at [TUA](#)



Note, if you have on-premises or on-demand licenses for earlier Tekla Structures versions, you need to install a license server on your computer or on a separate server in your internal network. Tekla Structures connects to your local license server to check your license. See more in [TUA](#).

1.3 Tekla Structures User Assistance

Tekla Structures includes complete documentation in an accessible system. The online Tekla Structures Product Guides and Support Articles is a detailed guide to Tekla Structures concepts, tools, commands, and features, with plenty of examples. Use the **F1 key** in Tekla Structures to access. If you have a dialog box open, Tekla Structures takes you straight to the related topic. The help is also available when Tekla Structures is not running. Go to *Windows Start Screen > All apps > Tekla Structures > Tekla User Assistance (TUA)*. These all are referred to hereafter as *Start Menu*.

Tekla User Assistance (TUA) is a support platform for all our customers. Support material, product guides, videos and extension help-guides can be easily found at <https://teklastructures.support.tekla.com/>. It is also accessible offline inside the Tekla Structures File menu on the left side of the screen. Go to *Help > User Assistance*.

We strongly recommend that you use the online help when possible as it is updated constantly.



Note that when you have found something useful in the online help, you can add a topic to your favorites or to your bookmarks depending on the browser you have used.

The README pdf in Windows **Start Menu > Tekla Structures 2021** is a one page document containing very useful information and links to Tekla products online services. The README comes in 11 languages.

1.4 Tekla Developer Center

Tekla Developer Center is the hub for all Tekla Open API information. Visit the service at <https://developer.tekla.com/> for API reference, programming guides, exercises, code examples, community for asking questions and sharing best practices and more.

Join Tekla Partners Program by filling out the application in Tekla Developer Center. Tekla Partners Program is designed to help our partners and customers develop complementary applications and integrations that add value to Tekla Structures. Read more about the Tekla Partners Program here:

<https://developer.tekla.com/Tekla-Partners-Program>.

1.5 Release Notes & Administrator's Release Notes

Release Notes and Administrator's Release Notes are released for each new version of Tekla Structures in TUA. They contain very useful information when upgrading to a newer version of Tekla Structures. Release Notes contains all the information about changes, new features and fixed features.

Administrator's Release Notes is a separate section that contains useful information on how to localize the new features. Please see TUA:

https://teklastructures.support.tekla.com/2020/en/admin_guide_tekla_structures_administrators_guide

2. Tekla Structures Installation

There are 2 main ways to install Tekla Structures on a workstation; download from the Tekla Downloads <https://download.tekla.com> and run the installer to your PC, or centralized installation through MSI installation - instructions in [TUA](#).

2.1 Installation requirements

Operating system

The installation requires that the operating system of the target computer is 64-bit Windows 10 or 8.1.

If the operating system is different, the installation is cancelled. The installation also requires that Microsoft .NET Framework 4.7.2 or newer is installed on the target computer. Installation of .NET Framework 4.7.2 is included in the Tekla Structures installation package and executed if needed. Tekla Structures also needs the following redistributable packages that are automatically installed during the Tekla Structures software installation if they, or newer versions of the packages, do not exist on your computer:

- Microsoft Visual C++ 2010 Redistributable (x64) 10.0.40219
- Microsoft Visual C++ 2010 Redistributable (x86) 10.0.40219
- Microsoft Visual C++ 2013 Redistributable (x64) 12.0.40649
- Microsoft Visual C++ 2013 Redistributable (x86) 12.0.40649
- Microsoft Visual C++ 2015 Redistributable (x64) 14.0.23026
- Microsoft Visual C++ 2015 Redistributable (x86) 14.0.23026



Note: If your organization installs Tekla Structures centrally using .msi packages, it may be necessary to download the required .NET Framework and Microsoft Visual C++ Redistributable components from Microsoft's web site and install them separately.

Hardware recommendations

To ensure a good experience using our software, make sure your computer meets hardware recommendations, see **Tekla Structures 2021 Hardware recommendations** document at TUA:

https://teklastructures.support.tekla.com/2020/en/ins_tekla_structures_hardware_recommendations

You can install [Tekla Structures graphics hardware test](#) from Tekla Warehouse to test the DirectX graphics performance of your setup and compare it to statistics from other users.

Backup

Like all valuable information and work your company is storing, it is also important to take backups of the model folders, 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.

Virus protection

Virus protection software has sometimes caused problems with 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 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.

2.2 Installing Tekla Structures

When installing Tekla Structures we recommend you go to the Tekla Downloads and download the latest Service Pack (SP) of Tekla Structures. The SP is a full installation; with the full SP installer, end users can install directly the latest Tekla Structures SP without having the final TS version installed in the first place. Besides that, the full SP can minimize the errors occurred during the add/remove program process. Service Pack includes fixes to errors found in the latest Final version or previous versions. The SPs can also contain new functionality. SPs are available for all users with a valid maintenance contract.



The System Restore point will be created upon the installation process. Therefore, you can roll back the machine to the previous state if there are any issues during or after the installation. **For restore**, go to *Windows Control Panel > All Control Panel Items > Recovery > Open System Restore*. Select the previous version of Tekla Structures from the list and restore it.



Tekla Structures installation must be done with administrative privileges. When installation is done in a centralized way to the client computers, end users do not necessarily need administrator rights.



If you do not install any environment, only the Blank environment is available. Do not use the Blank environment to edit models or drawings; it is only a starting point meant as a basis for building your own full customized environment and does not contain all of the tools and configurations you need to work efficiently.

For more detailed information on installing Tekla Structures 2021, see the **Tekla Structures Installation Wizard** in Tekla Downloads <https://download.tekla.com>

2.3 Centralized installation of Tekla Structures

Installing Tekla Structures software and environments one by one on each user's computer might be a time consuming task in large companies. Therefore, Tekla Structures is often installed in a centralized manner across company workstations by using MSI packages.

Detailed information on how centralized installation of Tekla Structures is carried out in practice can be found in [TUA](#)

2.4 Installing TSEP packages

Tekla Structures **.tsep** extensions (Tekla Structures extension package) are Tekla Structures extensions or environment content installers. They are delivered in Tekla Warehouse <https://warehouse.tekla.com> and in Tekla Structures environment installers. To learn more about TSEP, browse to Tekla Developer Center: <https://developer.tekla.com/documentation/tekla-structures-extension-package>. The comprehensive "Creating Tekla Structures extension packages" guide explains everything about TSEP.

There are 4 main ways to install a TSEP installer as follows:

- Environment installation
 - Tekla Structures environment installers are .msi installers. They include sets of TSEP installers that contain the actual environment files and settings. When installing a new version of Tekla Structures, install the software first and then the environments. Running the environment installers does not require administrator rights.
 - When you run the environment .msi installer, the installer creates the environment folder and copies the TSEP installers to the `..\Tekla Structures\<version>\Extensions\To be installed` folder. The installer also creates the `RemoveEnv.bat` and `ToBeRemoved.txt` files, and places them to the `..\Environments\<environment>` folder. These files are used when uninstalling an environment.
 - When running the environment .msi installer, you can select in the installation wizard that the TSEP installers are run immediately when running the environment installer. If you do not select to do this, the TSEP installers are run when you open Tekla Structures for the first time after the installation. In this case, Tekla Structures opens a dialog box that shows the installation progress of the TSEP installers.



Note, if you are installing **several environments** for the first time, we recommend that you do not select to run the .tsep installers immediately when running the environment installer. Some of the .tsep packages are used in more than one environment and the same version of a .tsep package is only installed once. Note also that starting Tekla Structures for the first time after installation can

take a long time particularly if you have installed several environments, as all the TSEP installers are run.

- Direct Installation

- By default `.tsep` package will be opened with **TepFileManager**, you just need to double click the TSEP installer you want to install. Some TSEP installers are run directly from Tekla Warehouse with "Insert into model" option.
- Tekla Structures **Extension Manager** window will show up with the extension name that is going to be installed
- Select the Tekla Structures versions you want to import and click the Import button. The next time you start Tekla Structures, this extension will be automatically installed and shown in TS extension manager.



Note: If the TSEP file is not set to open with TepFileManager by default, you can set it manually by right clicking on the TSEP file. Then select the Tekla Structures version(s) you want to install it to.

- Tekla Structures extension manager Installation

- You can also install a TSEP installer from Tekla Structures Extension Manager inside Tekla Structures.
- Click  button from Applications & Components Panel. TS Extension Manager will show up.
- Click Import... and browse to the TSEP installer you want to install.
- Click Open. The next time you start TS, this extension will be shown in TS Extension Manager and ready to be used.

- TSEP Centralized distribution - install

- This approach is preferable for system administrators who require to install a batch of extensions or environments across company workstations.
- In order to have a TSEP extension to be installed in Tekla Structures, you need to copy the TSEP installers to `%XSDATADIR%\Extensions\To be installed` folder. The default location is `\ProgramData\Tekla Structures\[TS_Version]\Extensions\To be installed\`.
- You can create the "**To be installed**" folder if it does not exist.
- When Tekla Structures starts, it will check available TSEP installers from the `\To be installed` folder and install automatically.
 - The Installed TSEP installers are stored in `%XSDATADIR%\Extensions\Installed`
 - The Invalid TSEP installers are uninstalled and moved to `%XSDATADIR%\Extensions\Invalid installations`
 - The cancelled TSEP installers are stored in `%XSDATADIR%\Extensions\Cancelled installations` (this includes those TSEP installers that have same or earlier version as already installed TSEP installer)
- We recommend using **ROBOCOPY** from the Command line (`cmd.exe`) to copy TSEP installers. More information of ROBOCOPY can be found in <https://en.wikipedia.org/wiki/Robocopy> and <https://technet.microsoft.com/en-us/library/ee851678.aspx>
 - The basic syntax is: `robocopy <Source> <Destination> [<File>[...]] [<Options>]`

- For example: robocopy


```
"\\Server1\prod\TeklaStructures\2021\Environments_TSEP"
"C:\ProgramData\Trimble\Tekla Structures\2021\Extensions\To be
installed" *.tsep
```
- This command will take all TSEP files from the Server1 network directory and copy to the local user TS_INSTALLDIR.
- robocopy "\\Server1\prod\TeklaStructures\2021\Environments_TSEP"


```
"C:\ProgramData\Trimble\Tekla Structures\2021.0\Extensions\To be
installed" *.tsep
"C:\Program Files\Tekla
Structures\2021.0\nt\bin\TeklaExtensionPackage.TepAutoInstaller.exe
" 2021.0 "C:\ProgramData\Trimble\Tekla Structures\2021.0" "2021"
exit /B 0
```
- This command will take all TSEP files from the Server1 network directory and copy to the local user TS_INSTALLDIR. It also installs all .tsep files before opening Tekla Structures.

TSEP Centralized distribution - uninstall

- You can uninstall TSEP-packages in batch by creating an empty file without extension named "RemoveExtensionOnStartup" in \ProgramData\Trimble\Tekla Structures\[TS_Version]\Extensions\Installed\[Extension_To_Be_Uninstalled]
- Next time Tekla Structures starts up, it will remove these extensions.

Upgrading

If you already have an older version of Tekla Structures installed on the computer, you can use the Migration Wizard to copy the TSEP installers and your 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 (that is, add or change drawing or report templates, catalog entries, etc.), we recommend that you create project and firm folders for customized files. This is a useful technique if you want to store the files for future use, or 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, so you retain your customized files without having to copy and paste, or export and import from previous versions.

If you have not set up project and firm folders yet, this is a good time to do so as it makes upgrading faster and easier. If you have customized previous versions without using firm or project folders, you will need to transfer the customized information to Tekla Structures 2021. We strongly recommend that you now use firm or project folders. Working through the following questions will help you transfer all the information you need.

Always test that the old company settings work before taking a new version of Tekla Structures into use.



You can also run the Migration Wizard later by running the MigrationWizard.exe that is by default located in C:\Program Files\Tekla Structures\2021\nt\bin\applications\tekla\Migrations\

2.5 Tekla Model Sharing

If your company is taking part in external projects or has internally more than one user working in the same model, you are recommended to use **Tekla Model Sharing**. With this, your users can work in 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 additional subscription. Admins can view and manage company shared models with Management Console <https://manage.teklamodelsharing.com/>.

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. 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, the organization administrator can assign and manage Tekla Model Sharing licenses in the web-based Tekla Online Admin Tool.

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.

Admins can view and manage all company shared models with a web-based Management Console. Login to Management Console at <https://manage.teklamodelsharing.com/> requires admin rights on Tekla Account.

Tekla Model Sharing cloud sharing service status is publicly available at <https://status.teklamodelsharing.com/>. On this web-site also, you can also find information about any service breaks.

If your company is interested in getting on-premises sharing service, you can now find comprehensive technical installation and management guide in TUA:

https://teklastructures.support.tekla.com/not-version-specific/en/ms_installing_on_premises_sharing_service

For more information about the additional costs and IT administration need involved, please contact your local sales.



Tekla Model Sharing requires a **single-user** model.

A model cannot be simultaneously shared and used in multi-user mode. If you want to start using multi-user mode as a means to share your model instead of Tekla Model Sharing, you need to first exclude your local version of the model from the sharing service and then convert it to a multi-user model.

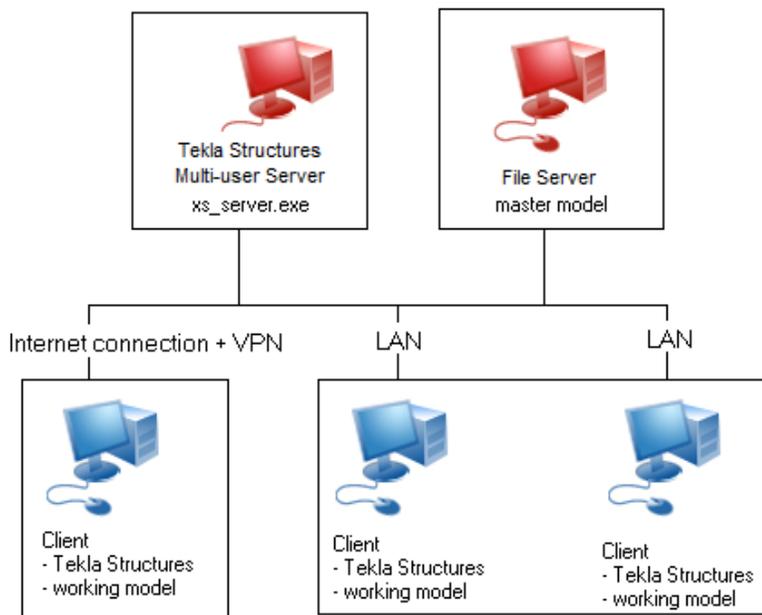
The excluded model has no connection to the original shared model in the sharing service. This means that if you exclude your local version of the model from the sharing service and start to use the model in multi-user mode, you cannot later merge the original shared model and the multi-user model.

For more information see TUA https://teklastructures.support.tekla.com/2021/en/ms_what_is_model_sharing

2.6 Installing Tekla Structures Multi-user server

When more than one users are working on a project in the same location, you can use a Multi-User system instead of Model Sharing. To enable this you need to install the multi-user server. The multi-user model consists of a single master model. Each user can access this model and open a local view of the model. This local view is called a working model. The image below shows one possible configuration of the Multi-User system.

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.



The multi-user server is a separate installation that is available on the Tekla Download site <https://download.tekla.com>.

A Tekla Structures multi-user system runs on a TCP/IP network and consists of:

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

Operating system

Tekla Structures multi-user server 2.5.0 runs on the following operating systems (32-bit Windows is not supported):

- 64-bit Windows 8.1
- 64-bit Windows 10
- 64-bit Windows Server 2016

Multi-user server hardware

The server that is used as the Tekla Structures multi-user server does not have to be very efficient or have maximum performance. The multi-user server can be used in networks that use IPv4, IPv6, or both the IPv4 and IPv6 protocols.

Other infrastructure

Set up scheduled backups for the model data stored on your multi-user server and store the backups on a different computer. The computers on the same multi-user network must have a unique IP address and identical Subnet masks. The computer running the multi-user server should have a fixed IP address.

The Tekla Structures multi-user server runs as a service. This means that the Tekla Structures multi-user server always starts automatically when you start the computer, and is always available when the computer is running.

For instructions on how to install the multi-user server and on how to run the multi-user server as a service see TUA https://teklastructures.support.tekla.com/2021/en/sys_multiuser_multiuser_system



When more than one user is working in different locations, you should use **Model Sharing** instead of multi-user.

3. Customizing Tekla Structures

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

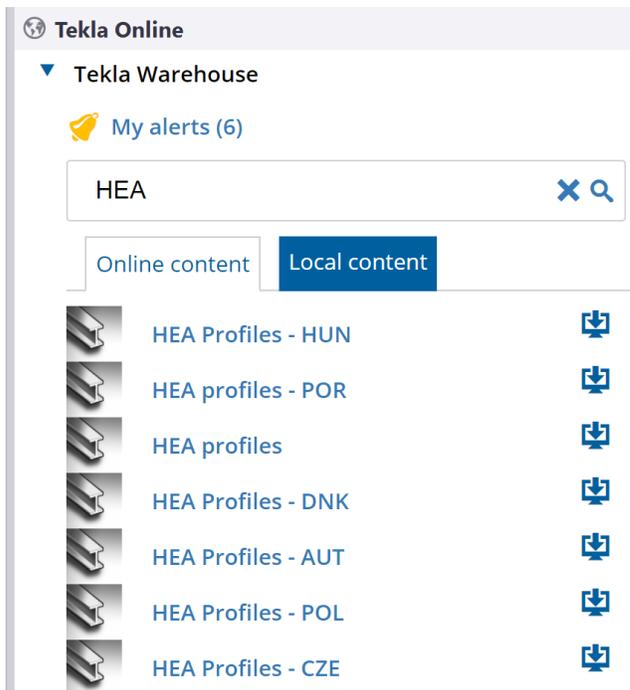
Before you start customizing Tekla Structures to suit the needs of your company and your projects, collect the needed information, such as drawing standards, used profiles, grades and materials, company logos, naming conventions etc.

3.1 Tekla Structures Localization

Each new version of Tekla Structures introduces new features and functionalities to improve the overall process used to complete a project. Tekla Structures has different 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 existing users (through the Helpdesk), new users (through our training class) and potential users (through demonstrations).

Lot of additional new content is also added to **Tekla Warehouse** <https://warehouse.tekla.com> like new application tools and environment content. Tekla Warehouse Catalog Collections for each environment has all catalog content; profiles, bolts, materials, reinforcements, etc. and you can search and install them inside Tekla Structures Side Pain under Tekla Online > Tekla Warehouse.



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

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

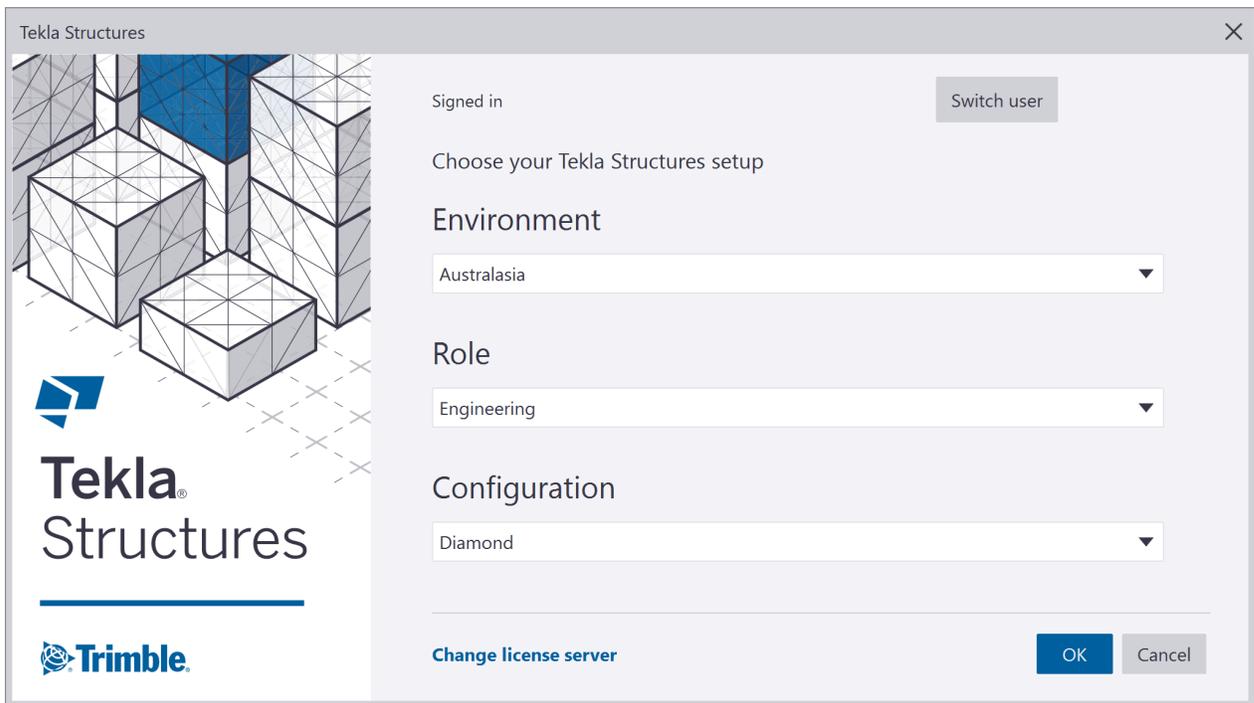
The three last ones are managed inside the company. Some companies also manage their own environment settings.

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

3.2 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.

The **environment** is set up to use the material, grades, profiles, drawing settings, component settings, ini-settings etc. that are used in a specific market. By choosing a specific environment when starting Tekla Structures you get the settings for that market. When installing Tekla Structures you can select the environments you want to use, environment can also be added later. There are 32 different environments in Tekla Structures. The *blank project* listed in environments is an empty platform for one's own environment or project settings development. It includes standard parametric profiles, undefined bolt, material and rebar grades, basic drawing layouts etc. which you can complement from your own firm or project folders and Tekla Warehouse.



The environments also give you the opportunity to choose 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 type of work the user is performing.

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 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 Tekla and reseller localization personnel, and be part of Tekla Structures installation package. However, advanced users and Tekla Structures system administrators can also create their own roles inside their company organization. Additional environment offerings are available in Tekla Warehouse collections. Note that you need to have Trimble Identity for downloading or installing from online collections.

See TUA https://teklastructures.support.tekla.com/not-version-specific/en/trimble_identity_faq

Installed folders

The software and environments are separated into different locations due to the requirements for Windows certification. The default folder structure is:

- **Software** is installed under the `.../Program Files/Tekla Structures` folder.
- **Environments and Extensions** are installed under the `.../ProgramData/Trimble/Tekla Structures` folder.
- **User settings** are in the `.../Users/username/AppData/Local/Tekla Structures` folder.



If you have an earlier version of Tekla Structures installed on your computer before installing version 2021, the installation will by default be done according to the old existing structure.

Common environment settings

In the folder C:\ProgramData\Tekla Structures\<version>\Environments\ there is a folder named `common`. All settings and files that are the same in all environments are located in this folder. Specific settings and files for an environment are then located in a separate environment folder.

The `env_global_default.ini` file is also located in the common folder. This initialization file is the first one to be read and it determines the standard settings. Other initialization files are read after this file and if the same settings are made there, they will override the previous settings.

Environment folders

The country-specific settings are in the environments folder and they are localized by your local Trimble office/reseller. The folder structure of the different environments can vary but the same kind of settings exist. The settings that are localized are profile database, material database, reports, selection filters, view filters, components and custom components, macros, user-defined attributes, drawings settings etc.

Tekla Structures 2021 version has a folder structure which is based on materials and roles in higher levels and functional units in sub-folders. Common content to all roles is in the "General" folder. For example the "General" folder under Concrete is shared between Cast in place and Precast roles. Example from Default environment:

-  Bitmaps
-  Concrete
-  General
-  Steel
-  Bypass.ini
-  env_Default_environment.ini
-  RemoveEnv.bat
-  role_Bridge_Designer.ini
-  role_Concrete_Contractor.ini
-  role_Engineer.ini
-  role_General_Contractor.ini
-  role_Precast_Concrete_Detailer.ini
-  role_Production_Planner_for_Concrete.ini
-  role_Rebar_Detailer.ini
-  role_Steel_Detailer.ini
-  ToBeRemoved.txt

- ▼ default
 - Bitmaps
 - ▼ Concrete
 - ▼ CastInPlace
 - ▼ Contracting
 - DrawingSettings
 - IFC
 - ▼ ModelingSettings
 - > profil
 - > Organizer
 - ReportsAndTemplates
 - Representation
 - UISetup
 - ▼ Detailing
 - ▼ ModelTemplates
 - ▼ Cast-in-Place
 - > attributes
 - > datastorage
 - > drawings
 - Embeds
 - ProjectOrganizer
 - References
 - ShapeGeometries
 - Shapes
 - ReportsAndTemplates
 - ▼ Shared
 - ComponentSettings
 - DrawingSettings
 - ModelingSettings
 - ReportsAndTemplates
 - ▼ Precast
 - ▼ Detailing
 - ComponentSettings
 - ComponentsSketches
 - DrawingSettings
 - > ModelingSettings
 - ▼ ModelTemplates
 - > Precast
 - > Organizer
 - ReportsAndTemplates
 - TaskManager
 - UISetup
 - ▼ Fabrication
 - ReportsAndTemplates
 - ViewSettings
 - ▼ Shared
 - DrawingSettings
 - ModelingSettings
 - > Organizer
 - ReportsAndTemplates
 - UISetup
 - ▼ General
 - ▼ Contracting
 - ReportsAndTemplates
 - Representation
 - ▼ Engineering
 - DrawingSettings
 - IFC
 - ModelingSettings
 - > ModelTemplates
 - > Organizer
 - ReportsAndTemplates
 - > UISetup
 - ▼ Shared
 - AnalysisModelSettings
 - ComponentSettings
 - ▼ Drawing Details
 - > Concrete
 - General
 - > Steel
 - DrawingSettings
 - > IFC
 - ModelingSettings
 - > Organizer
 - Profil
 - RebarShapeCatalog
 - ReportsAndTemplates
 - > Template
 - UISetup
- ▼ Steel
 - ▼ Detailing
 - ComponentSettings
 - ComponentsSketches
 - DrawingSettings
 - ModelingSettings
 - ▼ ModelTemplates
 - > Steel
 - nc
 - > Organizer
 - ReportsAndTemplates
 - UISetup

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 locate files in the 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	Open model
Project	XS_PROJECT
Firm	XS_FIRM

System	XS_SYSTEM
--------	-----------

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

There are some exceptions from this search order. The exceptions are listed in TUA > Folder search order https://teklastructures.support.tekla.com/2021/en/sys_folder_search_order

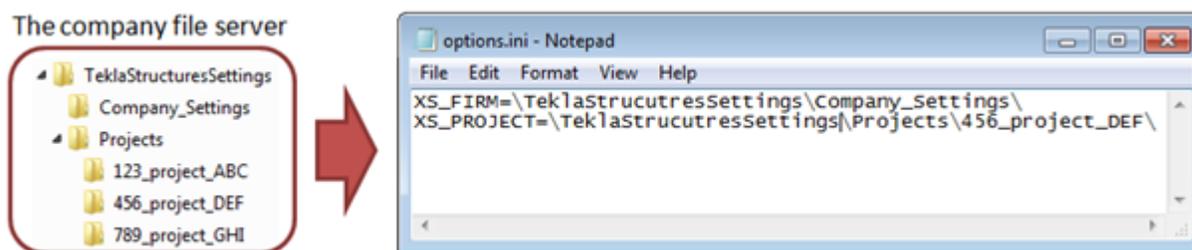


Do not store customized files in the search path of XS_SYSTEM. Tekla Structures replaces these files when you install a new release.

3.3 Project and firm folders

Project and firm folders are for 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, seeing that everyone uses the same settings in a project, and upgrading to a newer version of Tekla Structures much easier. 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.

All the settings that are used on the company level (for example, company logo, drawing standards) should be stored in a firm folder or its subfolders and all the settings used on a specific project should be stored in the corresponding project folder. Property files are always saved first in the attributes folder under the current model folder, for example, ..\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 advanced options **XS_PROJECT** and **XS_FIRM**. These advanced options should be put in the initialization files (see chapter 3.1.6). You can have several different .ini files. You can define in the shortcut to Tekla Structures which .ini files to run and which settings to apply.

Tekla Structures does not replace files in the project and firm folders when you install a new release, so 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. By storing files in just one place it is also easier to update the settings and see to it that everyone in a project is using 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 project *123_project_ABC*, copy the *column_ABC.ccl* from the attributes folder in the model folder to the project folder *123_project_ABC* on your file server. Make sure that everyone in the project has the correct path for their XS_PROJECT advanced option in the .ini file.



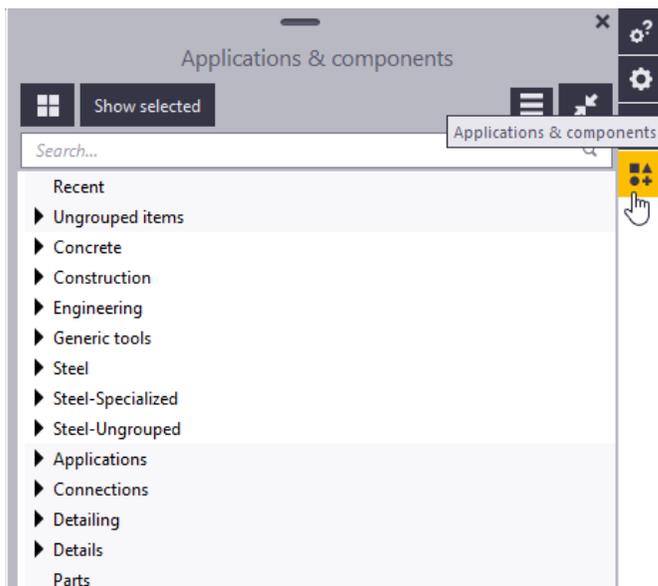
For more information, see TUA > Project and Firm Folders https://teklastructures.support.tekla.com/2021/en/sys_project_and_firm_folders. For information on folders and file extensions, see TUA > Files and folders in Tekla Structures https://teklastructures.support.tekla.com/2021/en/sys_files_and_folders

Project settings

Create your own component folder

Normally only a few different connections and components are used in a project. To make sure that everyone in the project uses the same components and finds the components faster, we recommend you to create your own component folder.

- Open the **Applications and Components** catalog from side pane on the right



- Create a new group for the project: right click > New group
- Add components to the group: select components > right click > Add to group, or drag and drop
- Hide not needed groups: right click > Hide



The commands in **Access advanced features > Catalog management** are used for modifying catalog definitions. For more information, see TUA XS_COMPONENT_CATALOG_ALLOW_SYSTEM_EDIT.

For more information see TUA

https://teklastructures.support.tekla.com/2021/en/det_getting_started_component_catalog

Project properties

At the beginning of a project you need to define project properties. This information is automatically used by reports and drawings. You can also update the project properties during the project.

- Select **File > Project Properties** from the menu to open the **Project Properties** dialog box.
- Select **Edit**
- Fill in the project properties and click **Apply**.

Modifying reports and templates

You can modify existing reports and templates or create your own templates by using the **Template Editor** in Tekla Structures. Go to **File > Editors > Template Editor...** , or double click an existing table in an open drawing to open the tool.

For more information on the Template Editor see TUA

https://teklastructures.support.tekla.com/2021/en/rep_templates

Setting up the 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. You can also change the line width of the printed drawings. See more in TUA

https://teklastructures.support.tekla.com/2021/en/dra_print_printing_drawings

https://teklastructures.support.tekla.com/2021/en/dra_print_configuration_files

https://teklastructures.support.tekla.com/2021/en/dra_printing_to_pdf

You can affect the way Tekla Structures automatically names the .pdf files and plot files by using certain drawing-type-specific advanced options. See TUA

https://teklastructures.support.tekla.com/2021/en/dra_customizing_pdf_file_names

3.4 Initialization files

Initialization files

Initialization files are used to launch Tekla Structures. They can contain many variables that you can use to configure Tekla Structures for different standards and your own style of working. Tekla Structures automatically creates the necessary initialization files during installation. The number of initialization 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. The advanced options are set through the initialization files. The different .ini files and what they do, and how they are related to each other are described below.

Different types of initialization files

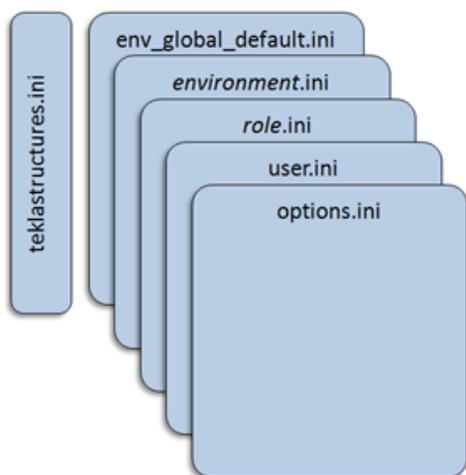
The file `teklastructures.ini` in the bin folder starts Tekla Structures. We recommend that you do not make any changes to this file.

`env_<your_environment>.ini` is located in the environments subfolder and it contains all the environment specific settings. These files are set by your area office or reseller.

`role_<role>.ini` is located in the environments subfolder and it contains the specific settings for a chosen role. For example the `role_Engineer.ini` in `../environments/uk/` folder contains all the settings for the Engineering role for the UK environment.

`lang_enu.ini` is the initialization file for the settings for the English language and it is located with the other installed languages in the `../nt/bin/` folder.

`user.ini` is the file where your personal settings are saved. 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.



Initialization file reading order

The default reading order for the initialization files is as shown in the image above:

1. `teklastructures.ini`
Initializes the settings needed for Tekla Structures to run.
2. `env_global_default.ini`
Sets the global default settings.
3. `environment.ini`
Sets the environment-specific settings.
4. `role.ini`
Sets the settings specified for the selected role.
5. `user.ini`

Sets the settings specified by the user.

6. `options.ini`

Sets the settings specified for the company/project/model.

If there are settings for the same advanced option, the latter setting overrules the previous one. This means that settings in `user.ini` overrule the settings in `env_global_default.ini`, which then can be overruled by `options.ini`.

We recommend that you make all your customizations in the `options.ini` (or `user.ini`) file. This way the customizations are kept when you install the next version of Tekla Structures.



For useful information on the initialization files see TUA > Initialization files (.ini files)
https://teklastructures.support.tekla.com/2020/en/sys_initialization_files

3.5 Setting advanced options

About advanced options

Tekla Structures contains three kinds of advanced options, user-specific advanced options, system-specific advanced options and model-specific advanced options.



Changing an advanced option value in the .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 the 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.

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.

`options.ini` contains the settings for **model-specific advanced options**. It is located in the current model folder. To share your settings with other people, copy `options.ini` to the system, project or firm folder.

The **system-specific advanced options** are stored in all other initialization files.

Setting advanced options

The .ini files are plain text files that can be edited with a text editor, such as Notepad. You can also use **Tools > Options > Advanced Options** in Tekla Structures. The settings will then be saved in the `options.ini` in the model folder for the model that you have open. The settings can then easily be copy-pasted into another .ini file. 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 initialization files.

To set an advanced option in the user.ini file:

- Locate the advanced option in the `C:\Users\\AppData\Local\Tekla Structures\\UserSettings\user.ini` file. Check that it is set and has the value you want to use.
- If it has, you can stop here.
- To change or add the advanced option, continue to step 4.
- Right-click the user.ini file in Windows Explorer and click Open with... Select a standard text editor from the list of available programs.
- On a new line, type set, then 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\2020`
- Save the user.ini.

Some Advanced Options need Tekla Structures restart.

See TUA for more about Advanced Options

https://teklastructures.support.tekla.com/2021/en/sys_settings_databases

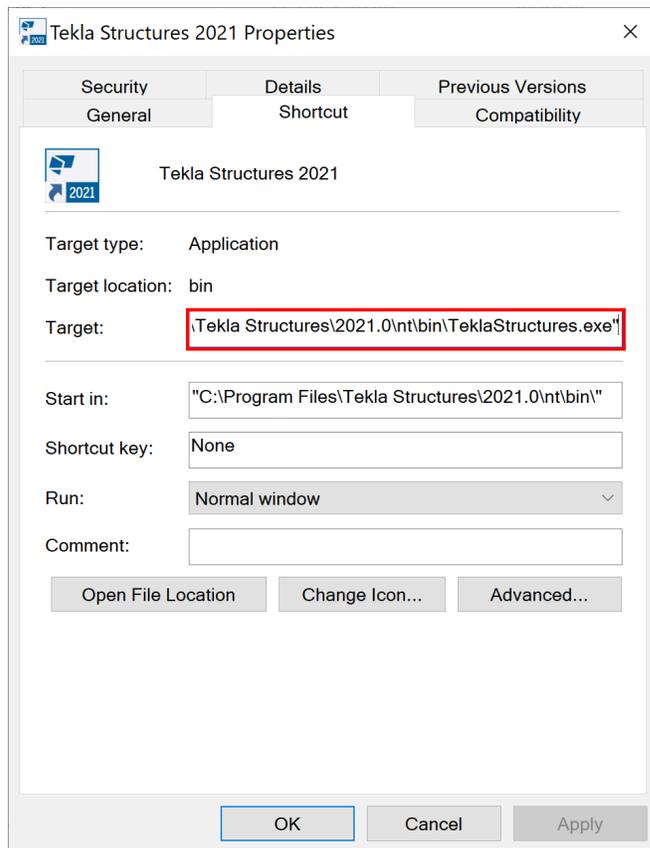
https://teklastructures.support.tekla.com/2021/en/sys_app_environment_variables

3.6 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 defined initializations.

To create a project-specific shortcut:

1. Make a copy of the default shortcut. In the Windows Start menu, go to All Programs > Tekla Structures <version> > Tekla Structures <version> and right-click.
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.



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.

For more information on the topic, see TUA

https://teklastructures.support.tekla.com/2021/en/sys_creating_shortcuts_for_customized_initializations

3.7 Bypassing login screen

If you want to bypass the login dialog box, use a separate .ini file, where you set the following three new advanced options:

- **XS_DEFAULT_LICENSE** The advanced option has the following options:
 - CARBON
 - GRAPHITE
 - DIAMOND
 - EDUCATIONAL
 - DEVELOPER
 - EPM_MODELER
- **XS_DEFAULT_ENVIRONMENT** This advanced option points to the environment specific .ini file, for example `%XSDATADIR%\environments\uk\env_UK.ini`

- **XS_DEFAULT_ROLE** This advanced option points to the role specific .ini file, for example
`%XSDATADIR%\environments\uk\Role_Steel_Detailing.ini`

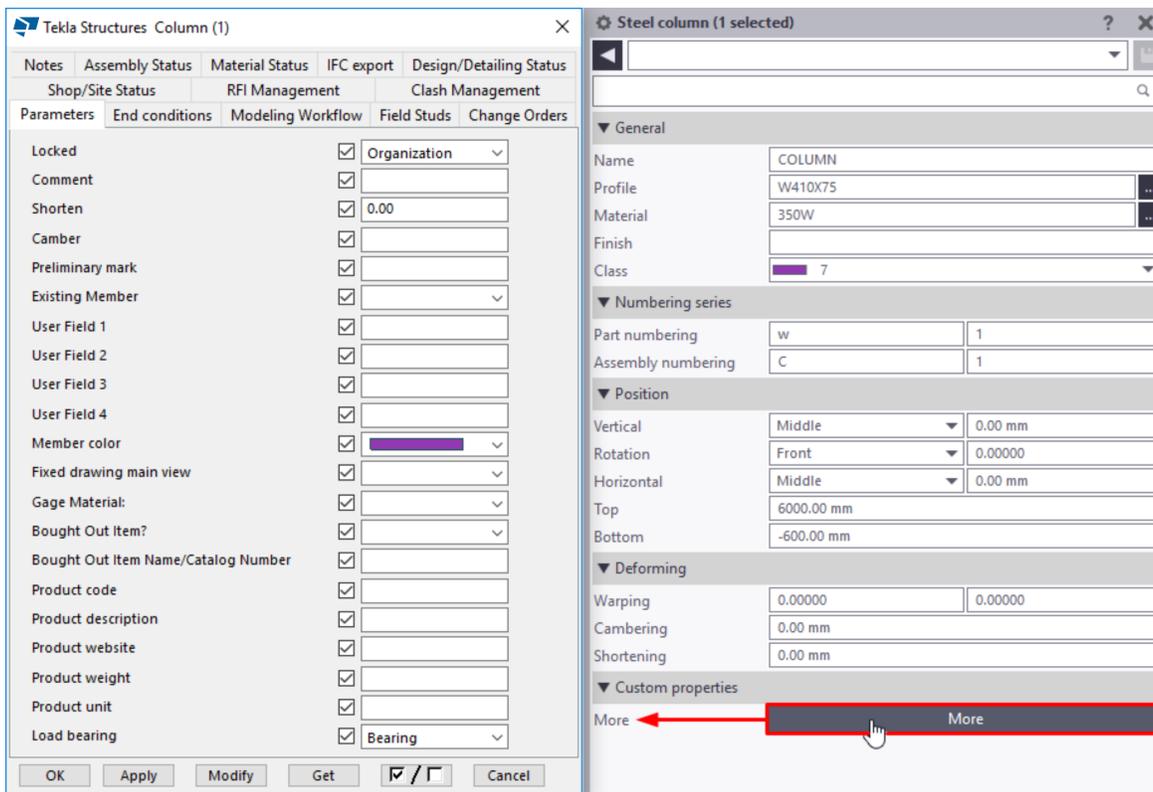
To be able to set these advanced options, you can use the new parameter for the shortcut: -i (capital i). This points to an additional initialization file to be read BEFORE reading the environment ini. For example: -i
`%XSDATADIR%\environments\uk\Bypass.ini`

Example content of such an .ini file:

```
set XS_DEFAULT_LICENSE=DIAMOND
set XS_DEFAULT_ENVIRONMENT=%XSDATADIR%\environments\uk\env_UK.ini
set XS_DEFAULT_ROLE=%XSDATADIR%\environments\usa\role_Steel_Detailer.ini
```

3.8 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; they can be used in filters, drawings, reports, export, import, fabrication, erection, revision handling, etc.



You can create your own user-defined attributes 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 by `objects.inp` files. These files are located in different folders (following the Tekla Structure folder setup) and they are merged together during startup. The `objects.inp` file reads attributes in order from the folders listed in the table below starting with the model folder:

Folder defined by advanced option

Model (current model folder)

Project	XS_PROJECT	(your defined project folder)
Firm	XS_FIRM	(your defined firm folder)
System	XS_SYSTEM	(your defined ...)
inp	XS_INP	(your defined ...)

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 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.

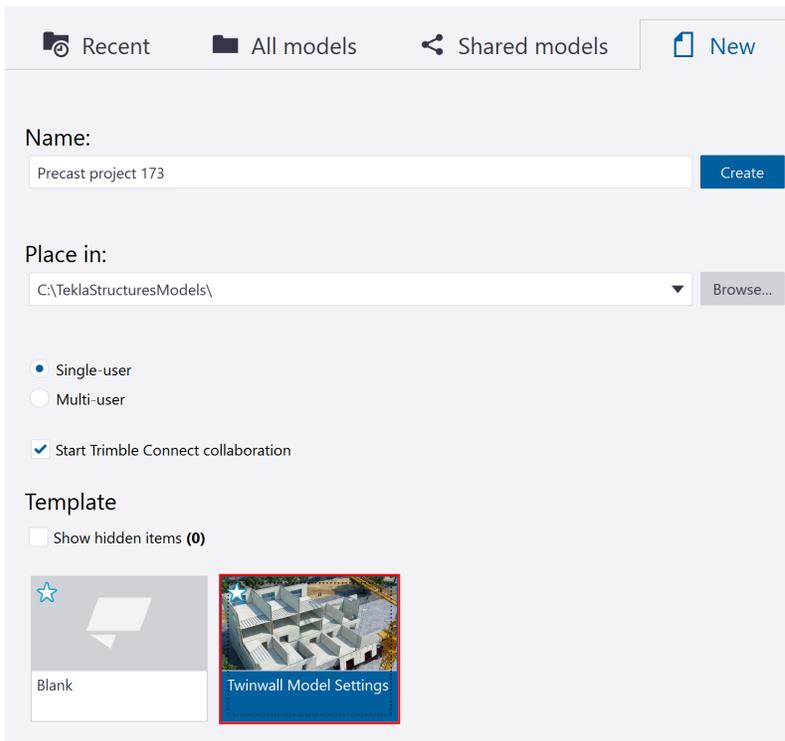
You can additionally use file naming `objects_<suffix>.inp` and they are merged to `objects.inp` files. Example: `objects_precast.inp`. This enables having several `objects_<suffix>.inp` files in the same folder.

For more information about adding your own UDAs, see the TUA https://teklastructures.support.tekla.com/2021/en/sys_example_creating_and Updating_uda

3.9 Model templates

You can save the desired settings in a model and use that model as a template when you create new models. This can be very useful if your company has projects of different kinds; parking garages, office buildings, bridges, industrial. These model templates can then be accessed when creating a new model.

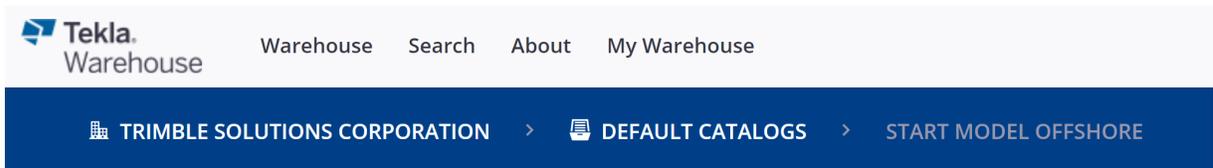
When you create a model template, always start by creating a new empty model. This is because old models cannot be completely cleaned and they might contain quite a lot of information even if you delete all objects from the model.



To create a model template:

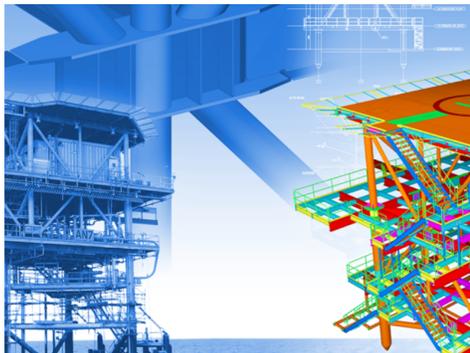
1. Create a new model and give it a unique name. For example, Steel framework.
2. Add the desired profiles, custom components, and so on, in the model.
3. Save and close the model.
4. Move the whole model folder in the location pointed by the advanced option `XS_MODEL_TEMPLATE_DIRECTORY`. By default, the advanced option points to the folder `..\TeklaStructures\<>version>\environments\usa\Imperial\General\ModelTemplates\`
5. In the new template model 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 obtain model templates from Tekla Warehouse <https://warehouse.tekla.com> by typing “model” into the search field. Example of Start model offshore:



Start model offshore

♡ 3 🔗 📌 0



Download

Offshore model template contains sample model showing various offshore components applied as an example. User can use this while starting new offshore structure & get acquainted with Tekla offshore specific component library. Saved to your `XS_MODEL_TEMPLATE_DIRECTORY` location.

“Insert into model” button installs the model template directly under `XS_MODEL_TEMPLATE_DIRECTORY` location and it is instantly selectable in new model creation.



It is strongly recommended to update your model templates in Tekla Structures version upgrade. See instructions in TUA

<https://teklastructures.support.tekla.com/en/support-articles/version-update-model-templates>

3.10 Customizing reports and drawings

If your company already has graphical templates in DXF, DWG, or DGN format, you can convert these into Tekla Structures templates. For detailed instructions on how to do this see Template Editor Help > AutoCAD and Microstation files.

The Template Editor Help also gives instructions on how to create your own templates and reports. Additional info is also available in TUA https://teklastructures.support.tekla.com/2021/en/rep_reports and https://teklastructures.support.tekla.com/2021/en/rep_templates

3.11 Cloning templates 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.

Cloning template drawings

With the Master Drawing Catalog you can use a drawing as a cloning template. When a drawing is set as a cloning template in the Master Drawing Catalog it can also be used in other models. This can be used in projects that have the same kind of drawings.

To create cloning templates:

- Select a drawing from the **Drawing List**.
- 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. The cloning templates can also be used in other models. To do this, open the Master Drawing Catalog in the model, click on the **Select models where Cloning templates are collected** -icon and add the model where the templates are saved.

For more information on the Master Drawing Catalog and cloning templates see TUA https://teklastructures.support.tekla.com/2021/en/dra_creating_drawings_in_master_drawing_catalog

4. Where to find more information?

Tekla Structures User Assistance (TUA)

Tekla Structures User Assistance contains information on how Tekla Structures works and instructions for using and setting up the program. We recommend you to always check the TUA first – that will save you a lot of time.

Release Notes and Administrator's Release Notes

In Administrator's Release Notes that are published with each version of Tekla Structures there is a lot of information about how to customize and take the newest features in Tekla Structures into use. Release Notes describes what is new in each release of Tekla Structures. By reading the Release Notes you can make sure that you are on the leading edge. Both are available in TUA.

Tekla Discussion Forum

Tekla Structures discussion forum is a useful way to share experiences, ask questions, and take part in advanced user's knowledge. You need a Trimble Identity to login. See more in <https://forum.tekla.com>

Tekla Developer Center

Tekla Developer Center is the central information source for Tekla Open API developers. Visit the service at <https://developer.tekla.com> for API reference, programming guides, exercises, code examples, a community for asking questions and sharing best practices, and more.

Attend training

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

Your local help desk

If you are on maintenance, you can e-mail or phone your local help desk for help.

You can also use the Support Tool inside Tekla Structures. On the File menu, click **Help > Contact Tekla support** and log in using your Trimble Identity. See more in https://teklastructures.support.tekla.com/2021/en/int_contact_support