

# Tekla Structures 16 Hardware Recommendation

## What's new in Tekla Structures 16 hardware recommendations?

### Compatible with Windows 7

Tekla Structures 16.0 is compatible with Windows 7, the newest Windows operating system. This means that Tekla Structures 16.0 has passed Microsoft-designed tests for compatibility and reliability on PCs running the Windows 7 operating system.

This means that Tekla Structures 16.0:

- Is tested for compatibility and reliability on Windows 7.
- Passed Microsoft designed tests to minimize the possibility of application errors, hangs, and reboots.
- Represents a commitment that the product will continue to work over the life of Windows 7.
- Meets privacy standards set forth by the Anti-Spyware Coalition.
- Installs cleanly and reliably.
- Eliminates unnecessary reboots.
- Ensures compatibility with Windows 7, both 32 bit and 64 bit editions.

### 3Dconnexion device support

Tekla Structures 16.0 is compatible with the following 3D mice provided by 3Dconnexion: SpaceNavigator, SpaceExplorer, and SpacePilot.

To take a 3D mouse into use, you need to install configuration files with which you can configure mouse functionality, depending on the 3D mouse you are using. The configuration files and instructions on how to use them are available in Tekla Structures Extranet > Product > Extension downloads ([https://extranet.tekla.com/BC/tekla-structures-en/product/extended-applications/Downloads/3DConnexionInstaller\\_160.zip](https://extranet.tekla.com/BC/tekla-structures-en/product/extended-applications/Downloads/3DConnexionInstaller_160.zip)).

## Recommendations for Tekla Structures workstations

Tekla Structures hardware recommendations are based on the setups that have been used in testing Tekla Structures and proven to be compatible with Tekla Structures. In addition to setups presented in this document, there are plenty of other suitable setups available. You can use this document as a guideline in choosing new hardware, but bear in mind that equipment and labels presented in this document are not the only suitable hardware setup.

The main criterion when choosing hardware is reliable performance. Therefore, it is advisable to choose components that are known to perform stably and be compatible with Tekla Structures. If you are considering a new hardware component, e.g. graphics card, test it beforehand to ensure it fulfills the requirements.

### Operating system

Tekla Structures is designed to work in Windows operating system: Windows 7 (64 and 32 bit), Windows Vista (64 and 32 bit) and Windows XP (32 bit).

### Hardware Components

Every component plays a role in the performance and usability of the computer. The important components for performance are memory, graphics card and processor. From an ergonomic point of view, the important components are monitor(s), graphics card, keyboard and mouse.

#### Memory

Memory requirements depend on the Tekla Structures model size. If you are working with very big models and you want to get the most performance out, you should have a proper PC installation of 64 bit Tekla Structures 16 on 64 bit operating system with hardware and drivers that have 64 bit support, and sufficient amount of RAM. Typically Tekla Structures workstations are having from 4 GB to 16 GB of RAM.

64 bit operating system is able to utilize more memory than 32 bit operating system, but 64 bit operating system also consumes more memory comparing to 32 bit operating system. Note that the supported amount of RAM varies within different 64 bit Windows editions. Please also note that especially with laptops the physical limit of supported RAM modules may be low.

Memory problems are usually difficult to trace. Do not buy the cheapest kind memory, but consider some quality brand.

#### Processor

"The faster, the better" is the rule that applies with processors.

In Tekla Structures 16 some commands, such as clash check, reference model handling and .NET applications, are run as a separate process, so a multi-core processor will provide certain benefit. Also, if you are running multiple software simultaneously, you gain benefit with multi-core processors.

Please note that Tekla Structures does not support Itanium processors.

### Graphics card

Tekla Structures rendering uses OpenGL, and graphics cards with good hardware support for OpenGL give the best performance. Tekla does not have resources to test all cards on the market, so we have chosen cards based on NVIDIA graphics processor to be our test platform.

In 3D software the importance of good graphics card is highlighted, but up-to-date display drivers are equally as important. You can install the updates for your graphics card driver from the manufacturer's website. Please note that the selection of drivers may vary between different Windows operating systems.

Graphics card manufacturers have slight differences in their OpenGL implementation, and there might be differences in the picture quality even between cards using NVIDIA chips. Therefore it's good to evaluate and test the cards before purchasing. Tekla has developed a special application for testing and evaluating graphic cards for Tekla Structures purposes. The application is called *Steelmark* and you can download it from Tekla Structures Extranet > Product > Hardware info.

### Monitor(s)

24" LCD monitor with full HD support is a good solution both from technical and ergonomic point of view.

Many customers are using two monitors with Tekla Structures as it enhances productivity. Therefore we have included two monitors in the recommendation table. To equip the workstation with two monitors you need a graphics card which is capable to drive two monitors. There is a wide selection of dual monitor capable graphics cards on the market, and many of those can combine good performance with reasonable price.

### Mouse

Some of the Tekla Structures commands require a click on mouse middle button to finish the command. Also zooming, panning and rotating are executed with middle button. Therefore 3-button wheel mouse is needed when working with Tekla Structures.

Tekla Structures 16 has also a support for 3Dconnexion 3D mice. 3D mouse can be used besides a regular mouse to enhance for example zooming, panning and rotating. 3D mouse does not replace the ordinary mouse but it may improve ergonomics and productivity.

### Printers

The principle of plotting in Windows environment is that all applications can use Windows printers, and the printer driver takes care of the rest. Software providers may also bypass the Windows driver interface, and write their own plotter-specific drivers.

Tekla Structures relies on Windows drivers, which are provided by the hardware manufacturer. The quality and the functionality of the driver is therefore dependant of the hardware manufacturer. Because some manufacturers pay more attention to their Windows drivers than others, the quality of the drivers varies quite much. Therefore it is essential to test the plotter with Tekla Structures before purchasing it.

Please note also that the selection of drivers may be more limited within 64 bit operating system than within 32 bit operating system.

## Recommended hardware

The following table presents two different hardware configurations. The recommendation is mainly for desktop computers, but the same guidelines can be applied also when purchasing laptops.

	<b>Recommendation</b>	<b>Best performance</b>
<b>Operating system</b>	Windows 7 or Windows Vista	Windows 7 (64 bit)
<b>Memory</b>	4 - 8 GB	12 GB ->
<b>Hard disk</b>	150 – 200 GB, 7200 rpm	200 GB ->, 7200 rpm (SATA or SAS)
<b>Processor</b>	Intel Core 2 Duo CPU 2.40 GHz AMD Athlon 64 X2 5050E AM2	Intel Core 2 Quad CPU 2.80 GHz AMD Phenom 9950 Black Edition 2.6 GHz
<b>Graphics card</b>	OpenGL support, 256 - 512 MB, e.g. NVIDIA 8800GTS (PCI express)	OpenGL support, 512 MB, two monitor support, e.g. NVIDIA Quadro FX series
<b>Monitor(s)</b>	21" 1600x1200 or 24" 1920x1200	Two 24" ->, 1920x1200 each
<b>Mouse</b>	3-button wheel mouse, optical	3-button wheel mouse, cordless & optical + 3Dconnexion SpacePilot
<b>Web browser</b>	Internet Explorer (32 bit)	Internet Explorer (32 bit)
<b>Backup equipment</b>	External hard drive	External hard drive with scheduled backups
<b>Network adapter (multi-user funct.)</b>	100 MB	1 GB Full duplex

## Recommendations for Tekla Structures license server

These recommendations apply for Tekla Structures License Server 1.14.

Server that is used as Tekla Structures license server does not have to be very efficient or have maximum performance. Reliability is the keyword. Therefore it's good to remember that server hardware itself is an important issue in terms of reliability, but maintaining the server system is equally as important.

### Operating system

The FLEXnet licensing system for Tekla Structures is designed to work in Windows XP, Windows Vista, Windows 7, Windows Server 2003, Windows Server 2008 and WMvare ESX Server. Linux or Unix based servers are not supported.

You can install Tekla Structures License Server on normal workstation, but the most reliable solution for serving multiple clients is to use a separate server computer with server operating system. Normal workstations are ok if you have less than 10 licenses to serve but when the amount of licenses to serve is more than 10 licenses, then it's definitely recommended to use a proper server computer with server operating system. Servers are designed to operate properly for longer time period without rebooting as often as normal workstation.

### RAID

RAID (Redundant Array of Independent Disks) is a technology that employs the simultaneous use of two or more hard disk drives to achieve greater level of reliability, performance and/or larger data volume size. Hardware based RAID is a good way of increasing the reliability of your license server.

RAID 1 is a mirrored solution, which can be recommended for Tekla Structures license server. RAID 1 protects data against the loss of one disk, so the data is not lost as long as one of the disks survives. RAID 5 can be considered as high-end solution for license server. It protects the data against the loss of any one of the disks.

Hardware based RAID requires special controllers. SCSI, SATA or SAS controllers can be recommended. Most of the controllers contain some kind of monitoring software which enables for example pop up message if one of the disks in the system fails. That kind of software is very useful in monitoring and maintaining point of view.

### Internet connection

You need to have an Internet connection in order to activate, deactivate or repair your Tekla Structures licenses. License activation, deactivation and repairing are the only cases when your license server contacts Tekla's activation server, and Internet connection on your license server is needed.

Direct communication from the server computer to the Internet needs to be allowed while the license server at your company contacts the activation server at Tekla. The activation communication is done using SOAP protocol over HTTP protocol on the TCP/IP port 80. Your firewall must not block any incoming or outgoing information during the communication. If you need to know the address of the activation server at Tekla for your firewall settings, you can check the address in the lat.ini file in the `..\TeklaStructures\License\Server` folder.

### Other infrastructure

Tekla Structures license server and the Tekla Structures workstations need to be in the same local area network. The workstations need to be able to contact the license server. The internal firewall of your company (for example, Windows Firewall) must allow the communication between the server computer and the Tekla Structures computers. You need to allow the applications *tekla.exe* and *lmgrd.exe* to operate through the firewall. The applications are located in the `..\TeklaStructures\License\Server` folder. If there is no local area network in your company, we recommend that you install the license server on each computer that Tekla Structures is running on, and activate one license on each computer.

The IP address of your license server should be fixed.

## Recommendations for Tekla Structures multiuser server

These recommendations apply for Tekla Structures Multiuser Server 2.3.

Tekla Structures multiuser server (*xs\_server.exe*) enables several users to work simultaneously in one model.

Server that is used as Tekla Structures multiuser server does not have to be very efficient or to have maximum performance. You can run Tekla Structures multiuser server on the same computer for example with Tekla Structures License Server, as long as you have dedicated different TCP/IP ports for each of the servers.

### Operating system

Tekla Structures multiuser server (*xs\_server.exe*) is tested in Windows XP, Windows Vista, Windows 7 and Windows Server 2003.

Please note that if you are using Windows Server 2003 Resource Kit Tools for running *xs\_server* as service, the Microsoft tools are supported only in 32 bit platform in Windows 2003 and XP.

### Other infrastructure

The computers on the same multiuser network need to have a unique ID number and identical Subnet mask. The IP address of your multiuser server should be fixed.

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