

Tekla Structures 17 Hardware Recommendation

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. If you are considering a new hardware component, e.g. graphics card, test it beforehand to ensure it fulfills the requirements. If you are considering purchasing large number of computers for your Tekla Structures users, test and verify the setup first with one or two computers before purchasing a large batch.

Tekla Structures is designed to be used on a desktop or laptop computer. Tekla Structures has not been tested for server installations or for virtualization.

Operating system

Tekla Structures 17 is supported in the following operating systems:

- 32-bit and 64-bit Windows 7
- 32-bit and 64-bit Windows Vista SP 2
- 32-bit Windows XP SP 3

Additional software components

Tekla Structures 17 uses Microsoft .NET framework 4.0 and Microsoft Visual C++ 2010 Redistributable. These software components are installed automatically by Tekla Structures 17 installation package, if needed.

However, if you are distributing Tekla Structures 17 in a centralized manner using .msi packages, then you need to download these software components from Microsoft web site and install them separately before distributing Tekla Structures.

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 size of the model. Large models require more memory.

An average setup for lighter projects is 32-bit operating system with 3 to 4 GB of RAM.

If you are working with heavier projects, you should consider having a proper PC installation of 64-bit Tekla Structures 17 on 64-bit operating system and at least 4 GB of RAM. It's not unusual to have 8 GB, 16 GB or even more RAM when working with large models.

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 17 some commands, such as clash check, reference model handling and .NET applications, are run as a separate process, and therefore a multi-core processor makes your work more efficient.

Please note that Tekla Structures does not support Itanium processors.

Graphics card

Tekla Structures rendering uses OpenGL technology, 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.

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.

If you want to share your experiences of different graphics cards, feel free to post your experiences on Tekla Extranet Discussion Forum: Hardware and Operating System.

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 17 has also a support for the following 3D mice provided by 3Dconnexion: SpaceNavigator, SpaceExplorer, SpacePilot and SpacePilot Pro. 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.

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.

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.

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.

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

Recommendations for Tekla Structures license server

These recommendations apply for Tekla Structures License Server 17.

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 VMware 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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