# SOLIDWORKS Comprehensive Hardware Guide

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| TITLE: | SOLIDWORKS Comprehensive Hardware Guide |
| DATE: | September 2024 |
| SUBJECT: | Hardware, laptops, desktops |
| ABSTRACT: | Advanced computer recommendations for SOLIDWORKS |

This document has been written to provide insight into the suggestions made in the Hawk Ridge Systems Hardware Recommendation document and to answer common hardware questions for users building custom system configurations to run SOLIDWORKS, SOLIDWORKS Simulation, and SOLIDWORKS Flow Simulation.

This is not a troubleshooting guide. If you have any technical issues with SOLIDWORKS please contact Hawk Ridge Systems Technical Support.

HAWK RIDGE SYSTEMS

# Contents

# Introduction

The Hawk Ridge Systems hardware documents combine all HRS knowledge regarding hardware and are derived from multiple sources including but not limited to internal testing, customer experiences, user forums, hardware reviews, system/component availability, direct discussions with SOLIDWORKS Corp. representatives, and the SOLIDWORKS System Requirements.

Hardware recommendations are based on currently available hardware. Unless explicitly defined as no longer supported or confirmed by support as unsupported, it is assumed that older hardware with similar specifications should be able to run the current version of SOLIDWORKS. It should be noted that while users may stay on older hardware of equivalent specifications, there may be additional performance benefits from newer technology and "clean" systems.

Users who are concerned about whether their hardware meets the current specs should compare the specs of their systems to the current specs using benchmarks, user reviews, internal testing, and if still concerned should contact Hawk Ridge Systems Technical Support.

While this document does not include an exhaustive list of all hardware options or components available, resources such as http://www.tomshardware.com and https://www.passmark.com can be consulted for more information. Some additional comments about benchmarks are available at the bottom of this document.

While SOLIDWORKS does not publish specific optimal recommendations, the Recommended Hardware Guidelines have been written under the assumption that most users are looking for an optimal configuration rather than the bare minimum. For users looking for the bare minimum system requirements – please refer to the SOLIDWORKS System Requirements page.

Hawk Ridge Systems recommends pre-built computers from manufacturers like Dell, HP, and Lenovo because these manufacturers develop drivers specifically for their hardware and have extensive QA for consistent performance and reliability.

## Unsupported & Not Recommended Platforms

While it may be possible to install or run SOLIDWORKS products on unsupported platforms, the extent of support that can be provided is limited. Customers using platforms not supported by SOLIDWORKS will be exposed to potential support limitations. In order to properly troubleshoot many hardware and software-related issues, support representatives and developers need to be able to reproduce those issues. Hawk Ridge Systems personnel will attempt to reproduce issues that are submitted to them with the supported platforms. However, if the issues are not reproducible or identifiable, Hawk Ridge Systems support personnel will have to close any issues that reach this point, as they are not covered by SOLIDWORKS development.

Similarly, customers using platforms described as not recommended may be exposed to similar issues that are generally less severe in nature, such as inconsistent behavior or limited performance. While these issues can be reported to development, a final resolution may not be obtainable or may result in an enhancement request to improve the software's functionality under these system configurations.

## Operating Systems

All operating systems should be updated 100% with Windows updates. Refer to the following table for specific version support for various Windows operating systems and SOLIDWORKS releases.

- √ Supported
- X Not Supported. Installation is not supported and while the software may install and run on these operating systems, these configurations have not been tested and cannot be supported.

| | 2023 | 2024 | 2025 |
|---|---|---|---|
| **Windows 10** | √ | √ | √* |
| **Windows 11** | √ | √ | √ |

1. SOLIDWORKS does not support Home or Basic versions of Windows. Only Business, Professional, Enterprise, and Ultimate versions are supported.

2. Windows 11 is currently the recommended operating system. Windows 11 is supported for SOLIDWORKS 2022 SP2 and later.

3. SolidWorks 2025 SP5 will be the last version of SolidWorks to support Windows 10.

## Virtual Machines and Apple Support

Beginning with SOLIDWORKS 2015, certain virtual environments are supported. Please refer to the official SOLIDWORKS system requirements page for more information.

Additionally, beginning with SOLIDWORKS 2015, certain virtual environments are supported for use on Apple computers. Bootcamp is still unsupported. Please refer to the SOLIDWORKS system requirements page for more information.

# Hardware Overview

For the majority of users, use the following tables for our current SolidWorks 2025 hardware recommendations. We have specific use case upgrades to consider listed below as well.

| | Laptops | Desktops |
|---|---|---|
| **Models** | Lenovo ThinkPad P16v Gen 2<br>Dell Precision Mobile Workstations<br>HP ZBook Power G11 | Lenovo ThinkStation P3 Tower<br>Dell Precision Desktop Workstations<br>HP Z2 Tower G9 |
| **Operating System** | Windows 11 Professional 64-Bit | Windows 11 Professional 64-Bit |
| **GPU** | NVIDIA RTX A500/NVIDIA RTX 1000 Ada | NVIDIA T1000/RTX A2000 |
| **CPU** | 13th Generation Intel Core™ i7/Intel Core™ Ultra 7 | 13th/14th Generation Intel Core™ i7 processor |
| **RAM** | 32GB | 32GB |
| **Storage** | 512GB SSD | 512GB SSD |
| **Other** | Microsoft Office 2021<br>3-Button Mouse with Scroll Wheel | Microsoft Office 2021<br>3-Button Mouse with Scroll Wheel |

## Potential Upgrades

Certain use cases require upgraded hardware. These include:

- Working with large assemblies and/or complex models
- Extensive multi-tasking (Multiple programs running simultaneously)
- Heavy Visualize usage
- Heavy Simulation or Flow Simulation usage

| Component | Benefits | Notebook | Desktop |
|---|---|---|---|
| **RAM** | -General Performance<br>-Multi-Tasking<br>-Rendering and Simulation Size/ Complexity/Speed<br>-Rendering | 64-128GB+ | 64-128GB+ |
| **CPU** | Rebuilding Features<br>-General Performance<br>-Simulation Solving and Meshing Speed<br>-Multi-tasking<br>-Open/Save<br>-Rendering Speed | Intel Core™ Ultra 9 | 14th Generation Intel Core™ i9 processor |
| **Storage** | -Open/Save Speed<br>-Rebuild Time<br>-General Performance | 1TB M.2 PCIe SSD | 1TB M.2 PCIe SSD |
| **GPU** | -Display Capacity (Number of Faces and Amount of Data Shown)<br>-Rotate/Pan/Zoom performance | NVIDIA RTX 2000 Ada-5000 Ada | NVIDIA RTX 4000 Ada-6000 Ada |

## SOLIDWORKS Visualize

For SOLIDWORKS Visualize users, we make an exception to the recommendation that workstation-class graphics cards should be used in their systems. Visualize benchmarks to show their best performance with NVIDIA GeForce graphics cards. This does not mean that NVIDIA Quadro cards will not work, but the recommendation here is that if you have a workstation dedicated to SOLIDWORKS Visualize, the workstation should have an NVIDIA GeForce graphics card setup. This should help to maximize your cost-to-benefit ratio. Please see the article below for performance benchmarks:

SOLIDWORKS Hardware Benchmarks

SolidWorks Visualize System Requirements:
https://help.solidworks.com/2025/english/Visualize/c_viz_prereqs_system_reqs.htm

# Graphics Card

Consumer graphics cards such as the AMD Radeon, and NVIDIA GeForce are not recommended due to graphics-related performance and stability limitations. Hawk Ridge Systems highly recommends the use of 3D workstation graphics cards such as the ones in the table below.

| | Brand | Entry | Mid-range | High-end |
|---|---|---|---|---|
| **Desktops** | NVIDIA | T1000 | RTX 2000 Ada | RTX 4000 Ada/6000 Ada |
| | Radeon Pro | W6400 | W7500 | W7900 |
| **Laptops** | NVIDIA | RTX A500 | RTX A2000 | RTX 4000 Ada/5000 Ada |

SOLIDWORKS maintains a list of certified graphics cards and their recommended drivers: https://www.solidworks.com/support/hardware-certification/

- Please be aware that notebook systems will only be found under the system manufacturer.
- New systems or graphics cards may take several weeks to be certified, so please check back often to verify that it is certified before purchasing. In general, new cards that already have certified cards of the same family (for example the NVIDIA Quadro family) will also be certified and will perform well with the latest driver for the system or card manufacturer until a certified/tested driver is available.
- If the card/system is listed for older versions of SOLIDWORKS, but not for current versions, you can assume that your card is no longer supported. See our OpenGL document for more information.
- When displaying greater amounts of graphical information (complex models, large monitors, multiple monitors, or high resolutions) more powerful graphics cards should be chosen to improve display performance.
- NVIDIA SLI and ATI Crossfire technology are currently not supported, and no benefits are gained by having multiple graphics cards. Hawk Ridge Systems recommends substituting multiple graphics cards with a more powerful, single graphics card if necessary.
- Currently, SOLIDWORKS does not leverage GPU processing.
- With Windows 10, and Windows 11 video cards with 256 MB or less will experience reduced performance due to architectural changes in the operating system.

## Intel Processor Graphics

Intel processor graphics (integrated into the CPU) provide the graphics and display for many of the Intel Core and Xeon processors. These Intel GPUs are not hardware-certified by SOLIDWORKS. While they may provide basic graphics functionality, they are not recommended for SOLIDWORKS usage.

# Processors

Users should make decisions based on the capabilities of a single core rather than the processor as a whole. In general, if you use the clock speed of the processor as the measurement, higher clock speed values, and benchmark results will provide better performance. It should be noted that AMD processors are rated differently than Intel processors and the manufacturer should be contacted to ensure those differences are considered.

Benchmarks that compare single processors to multi-core processors/multi-processor systems in SOLIDWORKS show that users who multi-task (Opening Drawings, Draw Compare, Boolean operations, Updating Views), Simulation and Flow Simulation will benefit from parallel processing (multi-core or multi-processors). For other functions, it should be noted that the majority of parametric operations are required to be performed sequentially (like rebuilding features in the feature tree) and by nature are single-threaded.

For modern generation processors (Intel Core CPUs) Hyper-Threading should be enabled. Testing indicates substantial benefits with turbo boost and hyper threading. However, results can vary depending on the hardware setup.

# Memory (RAM)

It is recommended to install as much RAM as is feasible to improve performance and stability by:

- Increasing the opportunity for RAM to be allocated to applications instead of the slower, more volatile hard drive-based page file.
- Reduce the amount of memory swapping between programs when there is not enough RAM to satisfy the needs of all programs.
- Improve the memory threshold for computers.

In most cases, more RAM is better. However, more RAM does not always equate to more speed. It is recommended to have enough RAM to handle the needs of your applications.

Faster RAM can also provide performance benefits but please verify with your hardware manufacturer that faster RAM is compatible with your system and that existing RAM is of equal speed. Existing RAM that is slower may reduce the performance of new, faster RAM.

# Storage

Having faster storage drives can impact the performance of the overall system as well as specific SOLIDWORKS functions, such as opening and saving documents. Finding specific SOLIDWORKS benchmarks for different storage drives will be difficult. However, newer storage technology has shown significant impacts on overall system performance.

Primary hard drives should have enough storage for the OS, other programs, virtual memory, temporary files, free space, file storage, SOLIDWORKS installer, and program files (Up to 12GB). The minimum storage space we recommend is 250GB.

| Storage Drive Type | m.2 PCIe SSD | SATA HDD |
|---|---|---|
| **Pros and Cons** | +Fastest storage available<br>-Highest priced | +Largest capacity per drive<br>+Lowest cost<br>-Slowest read/write speeds |

# Required Components and Other Software

## Display

Widescreen monitors are recommended because of the widescreen nature of the SOLIDWORKS interface.

When displaying greater amounts of graphical information (complex models, large monitors, multiple monitors, or high resolutions) more powerful graphics cards should be chosen to improve performance.

When using multiple monitors, the best compatibility is with monitors with the same resolution and color settings. This is the configuration that is used during SOLIDWORKS graphics card driver testing.

4k Monitors are becoming increasingly common. SOLIDWORKS began official support for 4k resolutions starting with version 2016 due to a user interface change to vector-based icons and fonts. If considering a 4k monitor, be aware that version 2016 and later is recommended for optimal usability.

## Network Connection

An internet connection is required to:

- Access to https://www.3ds.com/support/ for knowledgebase, technical articles, SPR tracking, etc.
- Access to Hawk Ridge Systems Help Center
- Downloading software updates (Depending on installed software the download required averages around 1GB but can range from a few MB to 12GB. High-speed internet connection is recommended.)
- Standalone license activation and obtaining SOLIDWORKS network licenses. (At a minimum, the activation process requires access to e-mail on at least one company computer)
- Remote support sessions and HRS Webinars. (High-speed internet connection is recommended)

For optimal performance and less chance of latency or data loss, wired network connections are recommended for network licensing and accessing files over a network. Users working with wireless connections or VPN connections should borrow licenses or move files locally. It should be noted that Hawk Ridge Systems does not recommend working with files over a network and users that need this capability should consider a data management solution such as SOLIDWORKS PDM Pro or Standard.

Remote desktop connections or VPN connections to SOLIDWORKS clients are not supported.

SOLIDWORKS is tested only with Microsoft's Windows Networking and Active Directory network environments. Novell networks and non-Windows-based network storage devices are not supported.

## Input Device

A 3-button mouse with a scroll wheel is required. Hawk Ridge Systems' experience shows the best compatibility is with Microsoft products with the most current drivers.

3D Controllers can be used but please check with the manufacturer to ensure that they are compatible with the version of SOLIDWORKS that you are using.

Tablets/Digitizers are currently not supported but should work in sketch mode. Please contact the hardware manufacturer for any compatibility concerns or for information on configuring the tablet for use in SOLIDWORKS.

### Microsoft Excel and Word

Microsoft Excel & Word versions should ideally be from the same time period as your SOLIDWORKS version. The table below shows which versions of Word and Excel are supported by the more recent versions of SOLIDWORKS.

- √ Supported
- X Not Supported. Installation is not supported and while the software may install and run on these operating systems, these configurations have not been tested and cannot be supported.

| | 2023 | 2024 | 2025 |
|---|---|---|---|
| **Excel/Word 2016** | √* | X | X |
| **Excel/Word 2019** | √* | X | X |
| **Excel/Word 2021** | √ | √ | √ |

SOLIDWORKS 2023 SP5 is the last release to support Microsoft Excel/Word 2016 & 2019.

# Optional Components and Software

- Anti-Virus/Anti-Spyware tools: Review Hawk Ridge recommendations: https://support.hawkridgesys.com/hc/en-us/articles/360060162592-Anti-Virus-Recommendations-for-SOLIDWORKS

- System/Disk Imaging Software: Should not be used as it is not supported by SOLIDWORKS. If used, SOLIDWORKS should be installed after systems have been imaged or should be used with a network license.

# Benchmarks

The best collection of SOLIDWORKS benchmark data is available at the SOLIDWORKS Benchmark Website. This data is shared by SOLIDWORKS users and utilizes the built-in Performance Test found in the SOLIDWORKS RX tool. The RX tool is included in every installation of SOLIDWORKS and can be run at any time.

Here are our tips and notes from running benchmark tests:

- Use the same version of SOLIDWORKS and service pack when performing the RX Performance Test.
- Reboot the computer and do not use the computer while the RX Performance Test is running.
- System options can have a direct impact on performance. Use a Copy Settings Wizard file to standardize and test different options for valid results.
- Hard drive performance benchmarks apply to SOLIDWORKS for opening and saving functions.
- Graphics cards that perform well in OpenGL tests or in benchmarks for other 3D CAD applications

based on OpenGL apply to SOLIDWORKS.

- Single-threaded application performance benchmarks apply to the majority of SOLIDWORKS functions, such as rebuilding.
- Multi-threaded application performance benchmarks apply to multi-threaded functions in SOLIDWORKS such as photo rendering and analysis. For more information about what processes are multi-threaded, please query the SOLIDWORKS knowledgebase using the search term "multi" or review the comments above in the Processor section.
- Overall processor benchmarks will still give a decent idea of the performance of a processor as long as equal core processors are being compared. For example, the results of a quad core vs. dual core ideally not be compared. If compared, it should be kept in mind that most processor benchmarks take into account multi-threaded applications which may skew the results towards the processor with more cores.

Some of the most common benchmarks used for evaluating existing systems or for choosing new ones are listed below. These benchmarks have been performed by third parties not associated with Hawk Ridge Systems and the publishers should be contacted directly with any questions you might have.

SOLIDWORKS RX Benchmark:

- See the Add-in tab in the SOLIDWORKS RX utility (Start Menu> All Programs>SOLIDWORKS 2025 > SOLIDWORKS tools > SOLIDWORKS RX)
- https://www.solidworks.com/support/hardware-benchmarks

Passmark (Tests all components within a system):

- https://www.passmark.com

# Other Hardware Guides

## SOLIDWORKS Authored

- SOLIDWORKS and SW PDM System Requirements

## Hawk Ridge Systems Authored

- Recommended Hardware Guide

This information is subject to change without notification. Please make sure you are using the most current version of the document.

For further assistance, please contact our support team at support@hawkridgesys.com, or 877-266-4469 (US) or 866-587-6803 (Canada).