

# OpenGL Troubleshooting

DATE:	3/30/2015
SUBJECT:	Fixing graphical issues

This is a troubleshooting guide. If you have any technical issues with the steps in this document, consult with [Hawk Ridge Systems technical support](#) and your IT department.

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# What is OpenGL?

OpenGL stands for Open Graphics Library and is a programming interface used to produce high quality 2D and 3D graphics. OpenGL is widely used in CAD, scientific information visualization, and virtual reality. Because OpenGL is widely used by a number of different software developers, it is commonly implemented and widely supported. Additionally, OpenGL is time-tested and constantly improving so it can be used in a multitude of different ways. Click [here](#) for more information.

## Hardware OpenGL and Software OpenGL

Most PCs use a dedicated graphics processing unit (GPU), also known as a video card, to process and create display information. Since it is using the available hardware, this is referred to as Hardware OpenGL. When a program or operating system is forced to emulate the OpenGL environment, it is no longer receiving help from the video card. This method of processing display information is known as Software OpenGL. Software OpenGL implementation has a very noticeable drawback – performance will be slower compared to the hardware assisted OpenGL, since the graphics card is not used.

## Identifying the Issue and What to do next

The first step in troubleshooting graphical issues is to identify what exactly is happening. You should ask these types of questions to help come up with some key words for your problem description:

- Does the issue happen after a certain command or action?
- Is the problem repeatable?
- Does it happen only with parts, assemblies, drawings, or all of them?
- What version of SOLIDWORKS am I using and what operating system do I have?
- Is it really a graphical issue? Or does something look different or unexpected (E.g. incorrect colors and appearances)

Many times, the issue has already been documented and a knowledge base article may explain what the problem is and how to fix it. Once you have some key words for your problem description, do a knowledge base search by logging into the [SOLIDWORKS Customer Portal](#) and then clicking on **Knowledge Base**. If your search did not provide any resolutions, take a look at the list below for common graphical issues.

## Types of Graphical Issues

- Geometry and position of models not displaying correctly
- Off-alignment of model and model views, ghosting, or disappearing geometry

- Software lockups and crashing, especially when graphics intensive operations are being performed. These include panning/rotating a model, or switching in and out of edit sketch mode
- Random crashing
- Vanishing lines, model edges, and views
- Objects (models, surfaces, sketch geometry or dimensions) appear to be visually off
- Poor rotation performance
- Crashing when a large amount of data is being displayed

If you are experiencing any of the above problems and searching the knowledge base did not help, then the next step is to follow the next three troubleshooting steps beginning with [Test 1](#). Each test below is designed to narrow down the cause of your problem. At the end of each test make sure to note your results and follow the instructions at the end of each test.

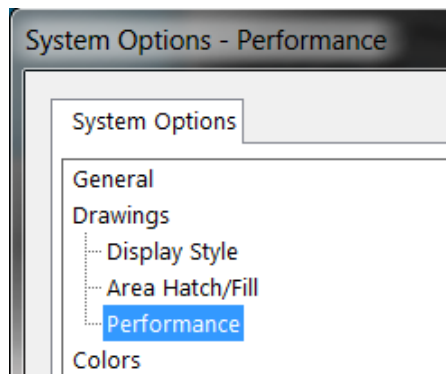
## Test 1: Using Software OpenGL

Enabling Software OpenGL is the first technique that should be used when troubleshooting a suspected graphics problem within SOLIDWORKS. If you are unable to recreate the problem while this option is enabled, then this is an indication that there video driver problem or SOLIDWORKS is not interacting with the video driver properly.

**Warning: Software OpenGL in general is meant for troubleshooting only.** Using the Software OpenGL option may result in slower performance or reduced image quality. This is due to the heavy load being placed on the CPU and SOLIDWORKS, instead of allowing the hardware to assist in the graphical display.

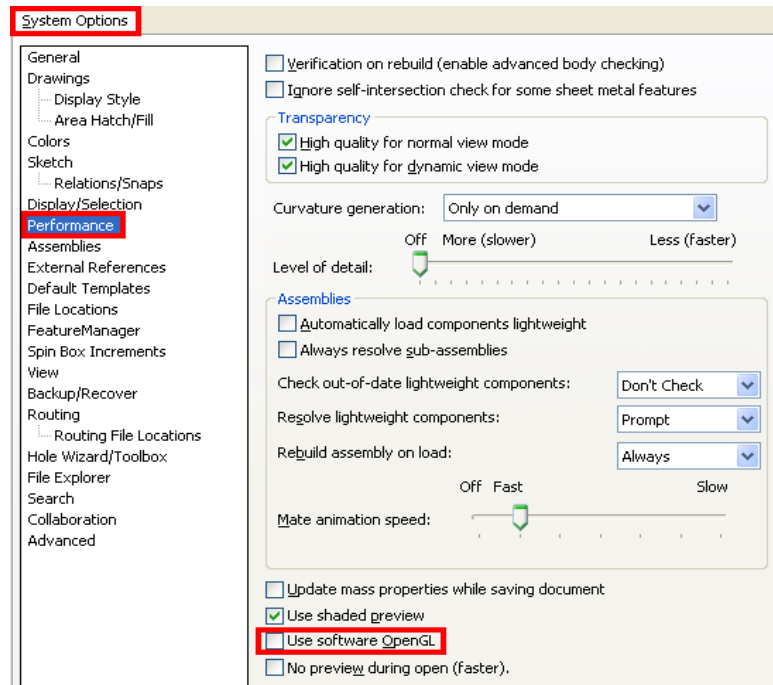
### How to Enable Software OpenGL

1. Start SOLIDWORKS
2. With SOLIDWORKS running, shut down all parts, assemblies and drawings.
3. Go to **Tools, Options** in the resulting window go to **System Options, Performance**.

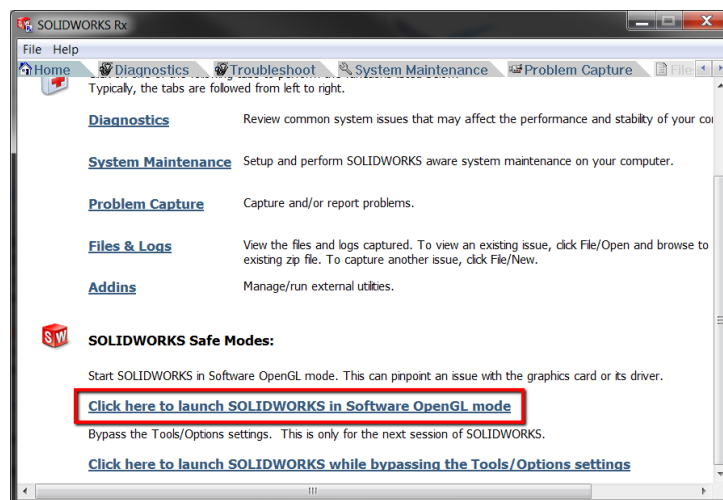




4. Activate the **Use software OpenGL** checkbox near the bottom of this page. See [here](#) if you cannot select this option because it is grayed out.



5. Press the **OK** button at the bottom of the options page to close the options box.
6. Reopen your document(s) that were having issues, and see if you can recreate the problem.
7. You can also launch SOLIDWORKS in OpenGL mode by using the SOLIDWORKS Rx Tool. This tool can be found by navigating to your Start Menu, finding your installation of SOLIDWORKS, and opening the folder titled "SOLIDWORKS Tools". This can be utilized if you are having issues with launching SOLIDWORKS.



If this resolves the issue, the problem resides with the video driver, so proceed to [Fixing the Problem](#).



If Software OpenGL in SOLIDWORKS did not fix your problem, proceed to [Test 2](#) which will disable the video driver at the operating system level.

#### What do to if this option is grayed out

The Open GL option will be grayed out if you have any files open in SOLIDWORKS. If you have nothing open in SOLIDWORKS and the option is grayed out, and checked, this is because your video card has no OpenGL capability and SOLIDWORKS has already turned on this option automatically. If this option is grayed out and you believe your video card is compatible and no files are open in SOLIDWORKS, additional troubleshooting steps will need to be taken. Please contact technical support using the information at the end of this document.

## Test 2: Disabling the Video Driver

Disabling the video driver at the operating system level will help us determine whether or not the video driver is installed properly. Each operating system has a different way of disabling the video driver. Please refer to the corresponding sections for your operating system.

#### For Windows 7:

1. Re-enable hardware OpenGL in SOLIDWORKS by un-checking the **Enable Software OpenGL** option in system options.
2. Shut down SOLIDWORKS.
3. Click on the **Start** Menu, type **Device Manager** in the search box, and hit enter.
4. Expand **Display Adapters**, and right click on the name of your graphics card and click **Disable** (if disable is not available, select **Uninstall**).
5. Reboot the computer, start SOLIDWORKS and retest the issue.

#### For Windows 8.1:

1. Re-enable hardware OpenGL in SOLIDWORKS by un-checking the **Enable Software OpenGL** option in system options.
2. Shut down SOLIDWORKS.
3. Go to your **Start Screen**, type **Device Manager**, and hit enter.
4. Expand **Display Adapters**, and right click on the name of your graphics card and click **Disable** (if disable is not available, select **Uninstall**).
5. Reboot the computer, start SOLIDWORKS and retest the issue.

If the problem is not reproducible after disabling the video driver, then the problem is with the video driver. In this case, re-enable your video driver (by reversing the steps above) and proceed to the next section.

## Fixing the Problem

Each of the tests listed above test different aspects of the video card driver. If the graphical issue was resolved by either of the tests outlined above, it means that the video driver may be incorrectly installed, or is corrupted in some way. Follow the steps below to address video driver problems.

1. [Find your current video card and driver](#)
2. [Check the SOLIDWORKS Graphics Card Requirements page for a certified driver](#)
3. [Uninstall your current driver](#)
4. [Install the recommended driver](#)

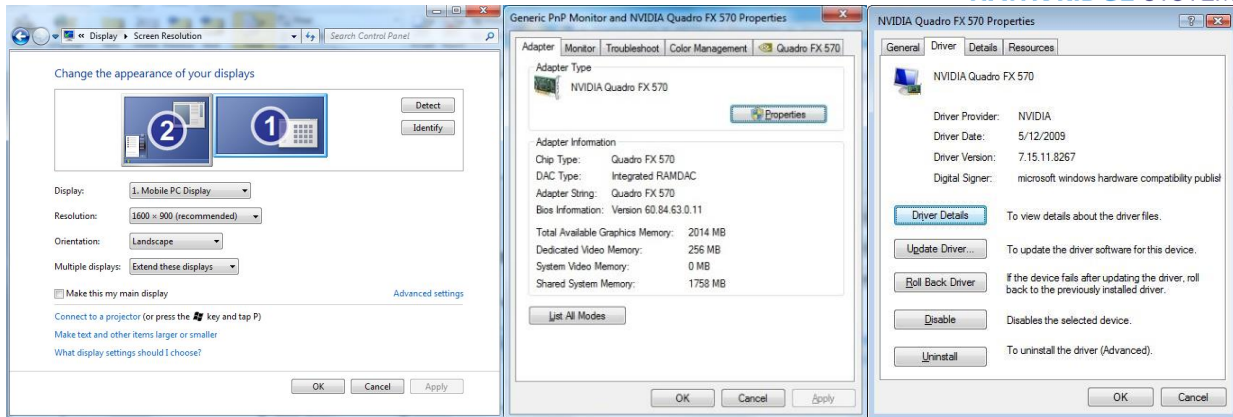
### Find your current video card and driver

The first step is to determine which video driver you currently have installed. This will tell us if you are currently using a certified driver. Follow the steps below for your operating system. Once you have found your video driver version, take note and then proceed to the [SOLIDWORKS Graphics Card Requirements page](#) to find the certified driver.

For Windows 7 and 8.1:

1. Right click anywhere on the desktop and click **Personalize**
2. Click **Display** on the left pane
3. Click **Change Display Settings**, on the left pane
4. Click the **Advanced Settings**
5. Click the **Adapter** tab, and your graphics card will be listed under Adapter Type
6. In the **Adapter** tab, click the **Properties** button
7. Click the **Driver** tab and the driver will be listed under Driver Version

The screenshots found below show an example of this process.




### The SOLIDWORKS Graphics Card Requirements Page

The graphics card page shows specific combinations of hardware that SOLIDWORKS has tested and the recommended driver for that graphics card. It will also show recommended drivers for individual graphics cards for custom made systems. Once you have downloaded the certified driver for your system by following the steps below, proceed to the [next step](#) to properly uninstall your previous driver.

1. Visit the SOLIDWORKS graphics card testing page:  
<http://www.SOLIDWORKS.com/sw/support/videocardtesting.html>
2. There are two methods to find your driver:
  - Choose the **Computer Vendor** of your system:
 










*If your system combination is not listed, select **Any System Vendor** as the **Computer Vendor** and then select you **Graphics Card Vendor***
  - Choose **Computer Model**.
 

*If **Any System Vendor** was chosen in step 2, this option will be grayed out. If this is the case choose the **Graphics Card Vendor** on the next line.*
3. Choose the **Graphics Card Model**. If your model is not listed it has not been tested.
4. Choose **SOLIDWORKS Version** you are using
5. Choose what **Operating System** you are currently running
6. Press **Show Results** to see lists of drivers for this hardware configuration.
7. At this point, you will be shown a list of graphics drivers, as well as the recommended drivers for the hardware configuration you selected. If your card is shown with a green check mark, it is recommended for use with SOLIDWORKS. Clicking on the **Notes** link may give instructions or list limitations that may pertain to this graphics card. Clicking on the actual driver version will begin the download for that specific driver. Save this file to your desktop. The illustration below shows the key for how the tested card has performed and other specifics.

Certified (Recommended) Driver Results						
						# of Items Shown 25
System	Card	Driver		SolidWorks	OS	Notes
8540w	ATI FirePro MS800	8.743.3.1	✓	2011	Win7 x64	 Notes

Page 1 of 1 | Displaying records 1 - 1 of 1

**Key:**

-  Card passed all tests
-  Passed with limitations (See Notes)
-  Significant stability or repaint problems
-  Use SolidWorks graphics card display settings
-  64-bit native support
-  Supports all RealView features
-  Supports RealView with limitations
-  Supports pre-2008 RealView features
-  Multi-head hardware accelerated

- Graphics cards marked with red stop sign are not recommended.
  - Graphics cards marked with a yellow yield sign are also not recommended because they only pass with limitations. However, if you click the **Notes** link next to that driver, it will list the limitations. If these limitations are something you can live with, this might not be a bad driver to test out. Hawk Ridge Systems suggests using the drivers that have passed all tests first and only using limited drivers if needed.
8. It is important to note that, even if a driver is not listed, this does not necessarily mean that the graphics card is not supported. If your card is not listed, see [what to do for unlisted cards](#).

What do you do if your card is not listed?

If you successfully located a certified driver for your system, skip this step and proceed to the next step on [uninstalling and re-installing the video driver](#). If your system/software configuration is not listed:

- Only certified and tested combinations of computer vendor, computer model, and graphics card Vendor/Model are displayed.
- If your combination is not shown, that means there is not a certified or tested graphics card for your configuration.
- Select a different combination or select '--- Any System Vendor' from the computer vendor field and select a Graphics Card Vendor and Model to show certified and tested graphics card drivers for your graphics card.
- If a driver is not listed, it does not necessarily mean that the graphics card is not supported. It may be there are no drivers tested for the card at this time.
  - **New Cards:** If a card is too new there may not be any drivers tested for it yet, in this case use the latest driver from the system or from the card manufacturer. Check back with SOLIDWORKS regularly for an approved driver.



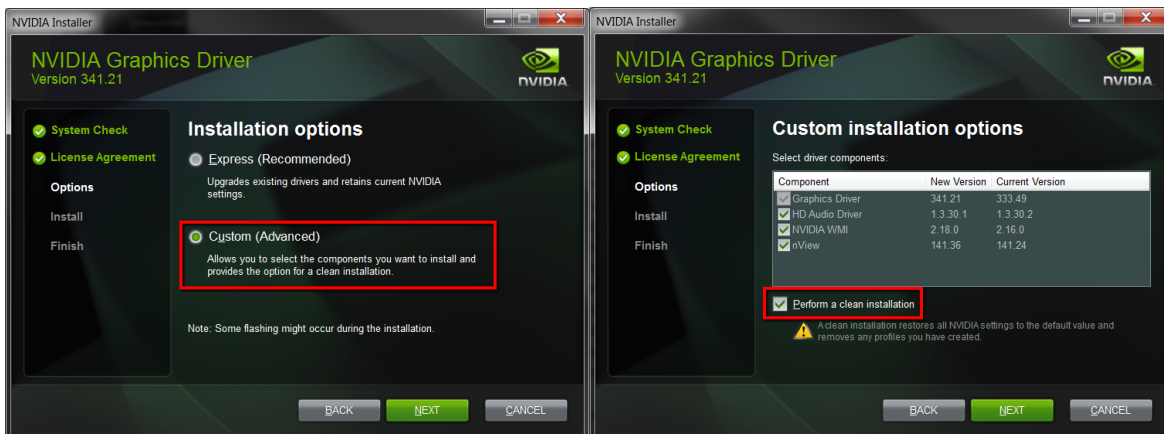


- **Old Cards:** Older graphics cards may still be supported, but the drivers may have been removed from the site. In this case, use the latest driver from the system or card manufacturer. We suggest trying the driver from your system manufacturer (example Dell or HP) first. If your system manufacturer doesn't have a driver for your card, revert to the driver from your card manufacturer (e.g. NVIDIA or ATI/AMD). For instance, if the card came pre-installed with a Dell system, the driver can be found on Dell's website <http://dell.com>. If the card was replaced after the system was purchased and is an ATI/AMD or NVIDIA card, you can find the latest drivers on <http://amd.com> or <http://nvidia.com/>. Once you have a newer driver from the manufacturer, proceed to the [next step](#).

### How to Completely Uninstall and Re-Install the Video Driver

Once you have downloaded a video driver, the next step is to remove the existing one and install the newly downloaded one. The steps below should ensure a clean installation of the new video driver. If this re-installation does not fix your problem, proceed to the final step of [checking your hardware](#).

1. Uninstall all of the graphics driver software. The uninstall process is outlined below for AMD and NVIDIA hardware.
  - AMD: Previously installed AMD video card drivers can be uninstalled by finding the version of the software in the **Programs and Features** section of the **Control Panel**. You can find detailed instructions on how to remove these drivers by clicking [here](#).
  - NVIDIA: A driver removal tool is included in each driver package.
    - Once you have reached the "Installation options" section of the NVIDIA Installer, select the "Custom (Advanced)" option. On the next page, select the box next to the "Perform a clean installation" option. This will completely remove the prior driver software.



2. Reboot your computer.
3. Retest your issue. If the issue is no longer present, your issue is now resolved. If the issue continues, then proceed to [check your hardware](#).

## Checking your Hardware

If all the steps in this document did not fix the problem, there are a few additional steps you can test prior to contacting technical support. If you are unfamiliar with these, please contact your IT group to perform the following steps:

- Make sure that your graphics card is seated properly. Turn off your computer, disconnect all power cables, and open up your case in order to remove the graphics card. After you have done so, re-insert the graphics card so that it firmly into its appropriate slot.
- Make sure your graphics card heat sink is clean. If the heat sink is clogged with dust, the fan no longer spins and the card maybe overheating. To clean the fan, follow the steps above to open your computer case, and use a can of compressed air to clear out any dust.
- If you happen to have a spare graphics card, try installing one of those. It is possible your card is malfunctioning.