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How to Set up OpenGL Stereo with nVidia 3DVision in Windows 10

Laptops and some Desktops – Disable Onboard Stereo in the BIOS First

Most laptops and some desktop workstations (especially custom built) need to disable the onboard graphics in the BIOS.

Do you need to do this? Here's how you check.

1. In the Windows Search, key in Device Manager and start the Windows Device Manager.

    Click the + to expand Display Adapters.

    - Your nVidia video card should be the only display adapter listed. If it is the only one, you don't have an onboard graphics adapter, so skip to the next section.

    - If you see any IT monitoring software in the Display Adapters list, take a screen capture of the Device Manager and send it to DAT/EM Support for further advice. IT monitoring software that appears as a display adapter often interferes with the nVidia card's graphics.

    - If you see anything such as "Intel graphics" or the name of a graphics adapter model in addition to your known nVidia card, this is an on-board graphics adapter. It must be disabled. If you see onboard graphics, continue.

2. If you have onboard graphics, close all applications and reboot the computer. Press the F2 key (or whatever key-in is indicated during the very first part of startup) to access the BIOS settings.

3. Uncheck the on-board graphics adapter. On a Dell laptop, it's called "Switchable Graphics" and it looks like the picture below. Other brands may look different. If you have a different brand and find this setting, please take a cell phone picture and send it along with the brand and model of your computer to DAT/EM Support. We will include it in a future version of this document.
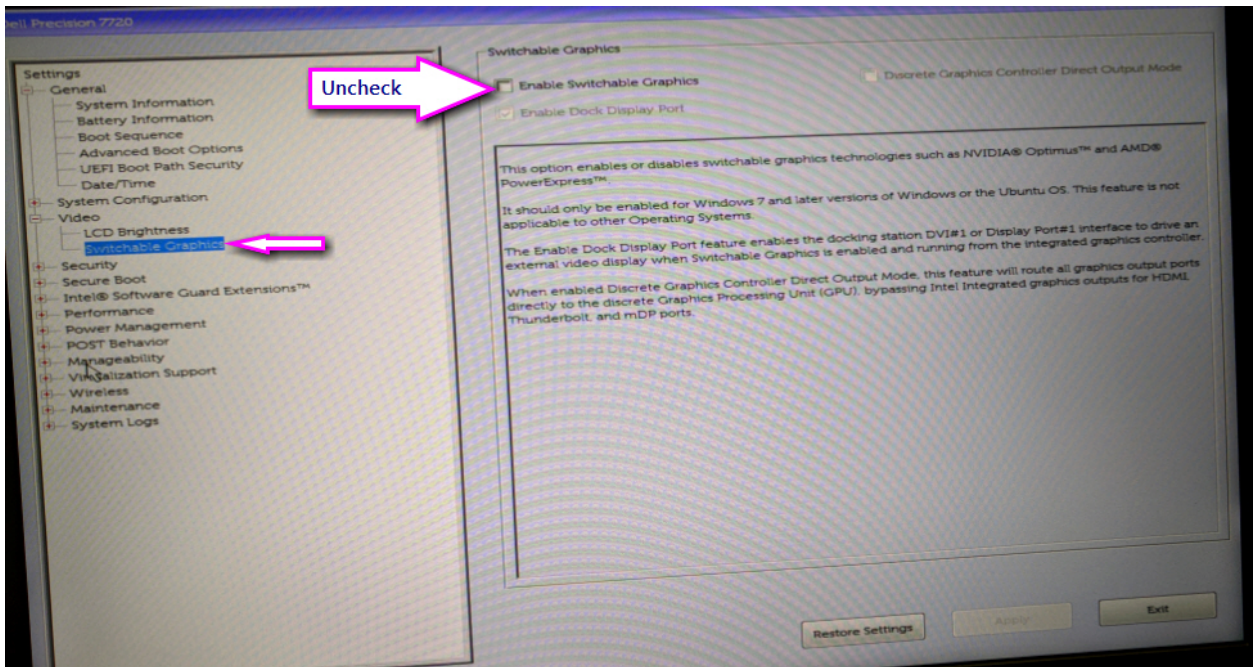
Example: "Enable Switchable Graphics" must be unchecked in a Dell Laptop's BIOS

Connect the Stereo Monitor by Itself and Make Settings

By setting up the stereo monitor first, Windows will "learn" that it is the primary monitor.

1. Start by plugging in only the stereo monitor alone. Do not plug in any side monitors yet.

    If all the ports on the Quadro video card are DisplayPorts, use the port marked "1". Otherwise use the lowest port number for the type of connector you're using.


Use the first Display Port or the DVI port (if any), depending on which connection is required.

Here, the first Display Port is marked "1".

Connect the stereo monitor correctly. The cable used will depend on the video card model and the monitor brand and model:

- If the monitor's specifications state that it is "nVidia 3DVision Ready", then it may be connected from a DisplayPort on the Quadro K-, M-, or P-series graphics card directly to the DisplayPort on the monitor. Some laptops have a mini DisplayPort, in which case the cable must be a mini DisplayPort on one end and a regular-sized DisplayPort on the other end; a passive adapter is acceptable in this case, but the more cables, the more chance of something going wrong, so it's best to get one cable with that configuration and no additional adapter.

DisplayPort   Mini DisplayPort   (not to scale)
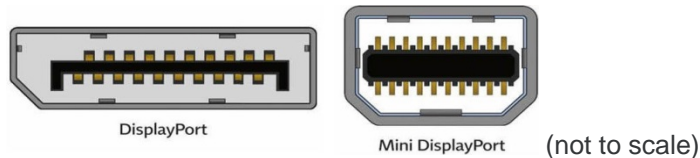
- If the monitor is not 3DVision Ready, and if the Quadro video card has a DVI-D port, then it should be connected using a good-quality **dual-link** DVI-D cable from the DVI-D port on the card to the DVI-D port on the monitor.

DVI-D (Dual Link)   (must have all 27 pins in the 3x7 array!)
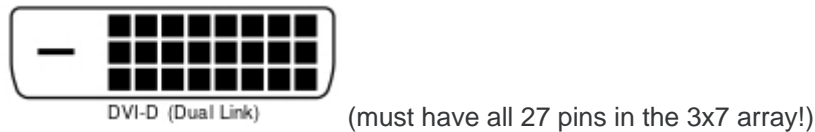
- If the monitor is not 3DVision Ready, and if the Quadro video card only has DisplayPorts, then it should be connected using a StarTech DisplayPort to DVI-D active adapter. The part number for this is DP2DVID2 for the regular-sized DisplayPort and MDP2DVID for the mini DisplayPort (some laptops). See articles: http://www.datem.com/tech-tip-how-to-get-3d-working-on-your-datem-workstation/ and http://www.datem.com/clarification-to-march-tech-tip-mini-display-port-vs-display-port/ for more information.

The StarTech adapter gets additional power through the USB connector, which is what makes it an *active* adapter. The adapter plugs into the USB port and DisplayPort on the Quadro card, then use a good-quality **dual-link** DVI-D cable from the DVI-D port on the adapter to the DVI-D port on the monitor.

With only the main stereo monitor connected to the computer, do the following to set up the main display:

2. Log on locally as Administrator. Install all Windows 10 Updates and reboot when requested.

3. Complete the DAT/EM software installation. Summit Evolution will be needed to test OpenGL stereo. *The nVidia stereoscopic test program does not test OpenGL, so you don't need to run it!*

4. You will need a stereo Summit project for testing. You may use your own project, as long as you know it is completely oriented and previously proven to have a good stereo view. If you don't have a stereo project of your own, download the "Vexel UltraCam Digital Camera" demo project from http://www.datem.com/downloads-2/#1446581349898-5673439c-5b31 using the current support download password.

5. Plug in the 3DVision emitter to a USB port directly on the computer. DAT/EM does not recommend using a USB hub for the emitter.

6. Install the latest video driver from www.nvidia.com as "Custom" and "Clean". When you look for drivers, go to www.nVidia.com. This may route you to your localized nVidia website. Or, you may go to the U.S. site here: http://www.nvidia.com/Download/index.aspx?lang=en-us
Select the "Drivers" link. Enter:
   -- Quadro
   -- Quadro Series
   -- Your video card model
   -- Windows 10
   -- Optimal Driver for Enterprise (ODE)
   -- Your language preference.

   It will offer the most recent driver supported for the card and OS.

   Download and install the latest nVidia driver for the card and operating system. Install with the "Custom" and "Clean" settings (very important).
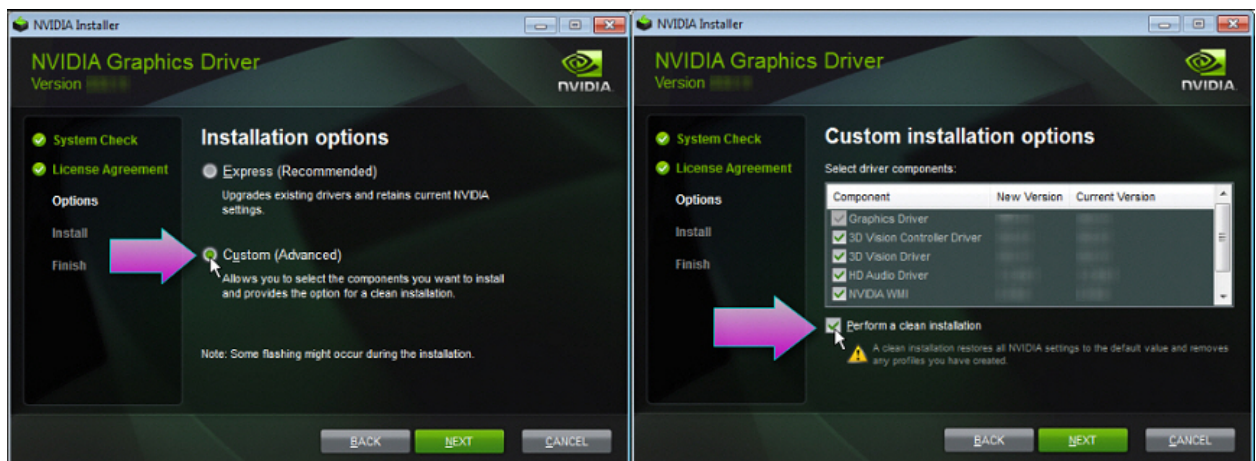
   If you forget to select "Custom" and "Clean", run the installation again with these settings on.

   Reboot after installing a video driver, even if it doesn't ask to reboot.

7. Right click on a blank area of the desktop. Select Display Settings from the menu. Make sure "3D Display Mode" is on.
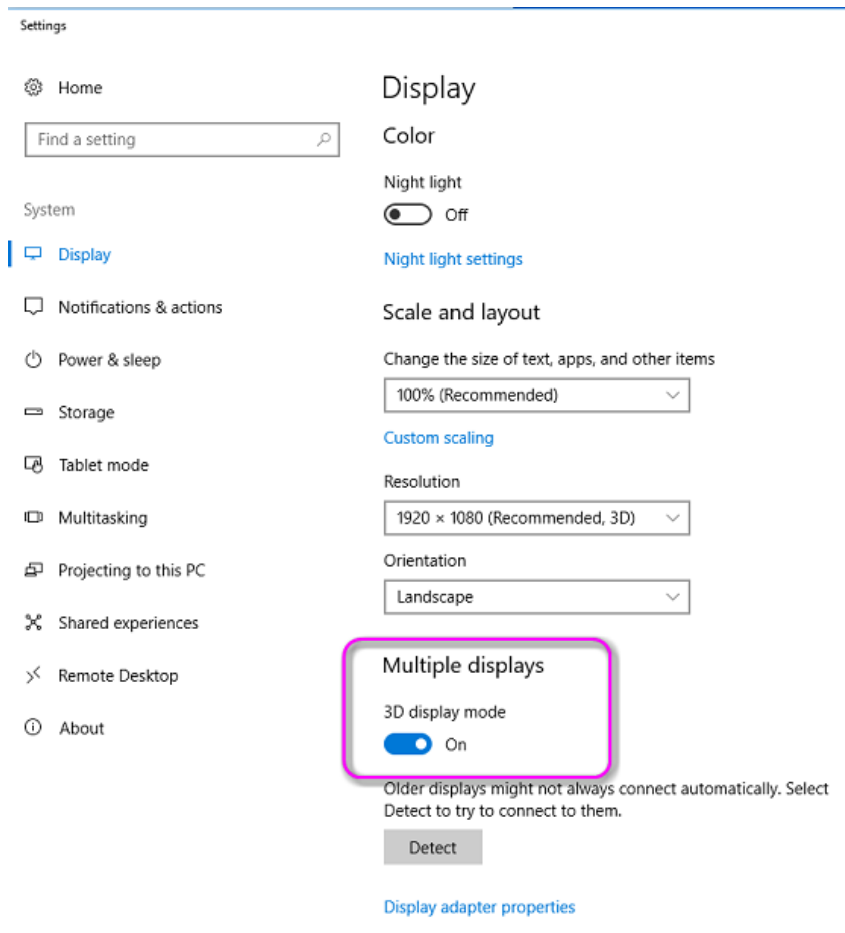
8. Close the Windows Display Settings dialog.

9. Right click on the desktop and select "NVIDIA Control Panel" from the menu. Make the 3 stereo settings and apply them.

   ✓ **Display** > **Change Resolution** > **Refresh rate=120Hz** for the stereo monitor. *Do not select 144Hz; it never works!*

   ✓ Some high-definition G-SYNC monitors such as the ASUS PG278QR may need to set **Manage 3D settings** > **Base profile** > **Monitor Technology** > **Fixed Refresh**. If your settings do not include **Monitor Technology**, you may ignore this. Note: On a DAT/EM customer's ASUS PG278QR monitor, the "**Stereo – Enable**" setting (mentioned below) was not available until **Monitor Technology** was set to **Fixed Refresh**.

   ✓ **Manage 3D settings** > **Base profile** > **Stereo - Enable=On**

   ✓ **Manage 3D settings** > **Base profile** > **Stereo-Display mode="on-board DIN connector (with NVIDIA 3D Vision)"** if it is offered. If it is not offered, try **"Generic Active Stereo (with NVIDIA 3D Vision)"**. If neither of those is offered, try each of the first three or four items in the "Stereo - Display Mode" list. One will give better stereo than the others.

10. Start Summit and make sure stereo is working. Summit must have a stereo model open (two overlapping, oriented images) and "Ground" coordinates showing in the lower right corner of the Summit window. The cursor should be near the ground elevation in order to see good stereo. Continue to the next section only if stereo is working perfectly in Summit.
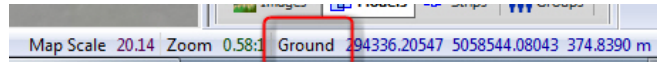
Summit should show "Ground" in the lower right corner

When Summit opens a stereo model, the light on the emitter should change from a dull green to a very bright green.

- Make sure the emitter has an unobstructed line of sight to the stereo glasses.
- Make sure the stereo glasses are fully charged and powered on.

Plug in One or More Additional Desktop Monitors

Now that the stereo monitor is set in Windows 10 as the primary monitor and OpenGL stereo is working, add one or more desktop monitors.

1. Plug in the second monitor. Use the lowest available port number for the type of port needed.

   For example, if there are four DisplayPorts and the stereo monitor is in port "1", plug in the second monitor to port "2", and later plug in a third monitor to port "3".

2. It should be recognized as the second monitor, but you can check. Right click on a blank area of the desktop. Select Display Settings from the menu. Now there should be two monitors showing. You can select **Identify** to mark them as 1 and 2.

   If they are in the wrong left-right order compared to their physical position on the desk, you can click on them in the dialog and drag them to the correct position. However you organize them, when you pick on "1", it should be the main stereo monitor. If it is not (**Identify** again just to be sure), click on its number and check on "Make this my main display" shown by the arrow below. This setting turns light gray once it is checked; that's normal. If you find you need to change this setting, you should also verify the three nVidia stereo settings shown in the section above are now applied to the correct main display.

   In addition, Multiple Displays should be set to "Extend these displays". "3D display mode" should still be on when you have Monitor 1 selected.

3. Repeat the above steps to connect any additional desktop monitors. You may plug in as many monitors as there are ports on the Quadro video card. For example, you may plug in a total of four monitors – one stereo monitor and three desktop monitors – to a Quadro P4000.

Example showing two monitors connected