

Vince Pallaver, Elo Touchsystems, June 2010

Short description of problem: graphic card is underscaling output video

Longer description of problem:

Windows 7 PC

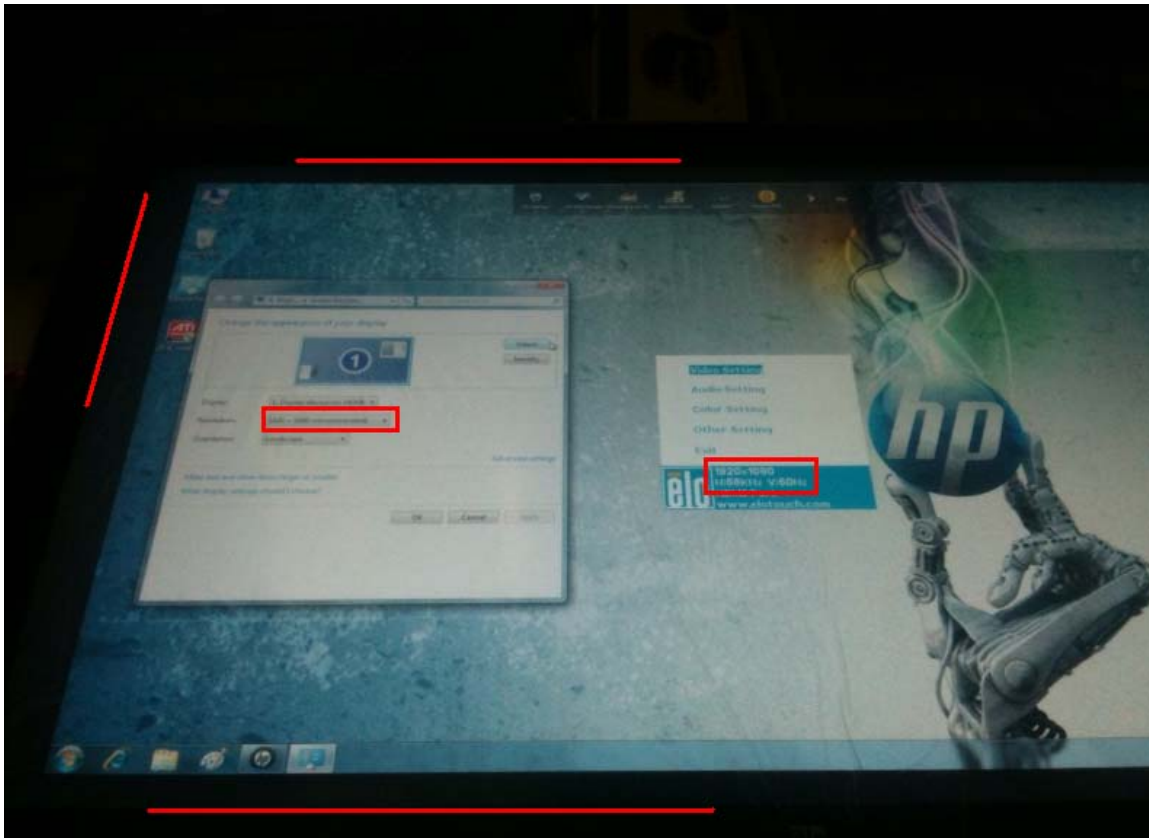
Radeon HD 4550 or Radeon 5450 graphic card with latest drivers

Using graphic card digital outputs (DVI or HDMI)

Windows and Radeon's Catalyst Control Center utility both report that the graphic card output resolution is 1920x1080.

The Elo monitor's main OSD menu reports that the input video resolution is 1920x1080.

Here's a fuzzy photo. I've indicated the edge of the active display area by the redlines. You can see that the desktop image you would expect does not fill the active display area.



In general: if Windows is reporting an output resolution ABC, and the Elo monitor is reporting the same input resolution of ABC, and the image you expect to see on the display is not fully scaled (with no undershoot or overshoot) to the display's native resolution, then the graphic card is adjusting the image somehow.

In this example, the graphic card is underscaling the video. This means it is still outputting 1920x1080, but shrinking the video and filling the gaps on all four sides with black pixels.

So – why do these Radeon graphic cards do this? Here's my guess:

The Radeon software designers have assumed by default that if you are plugging in a digital display device and operating at 1920x1080, your digital video device must be an HDTV (as opposed to a monitor). Understanding distinction between a TV and a monitor is important. The differences are nebulous, and not really defined anywhere, but one of the differences is that TVs (like today's 1080p HD TVs) typically overscan by around 5% (I don't know why – possibly a relic from CRT days). Monitors (like Elo monitors) do not overscan.

So, because Radeon assumes your digital display is a TV, they assume your TV overscans by 5%, and to guarantee that your PC image will appear fully scaled on a 5% over-scaled display, they underscale the image by 5%. (PS – this scaling can also affect image fidelity)

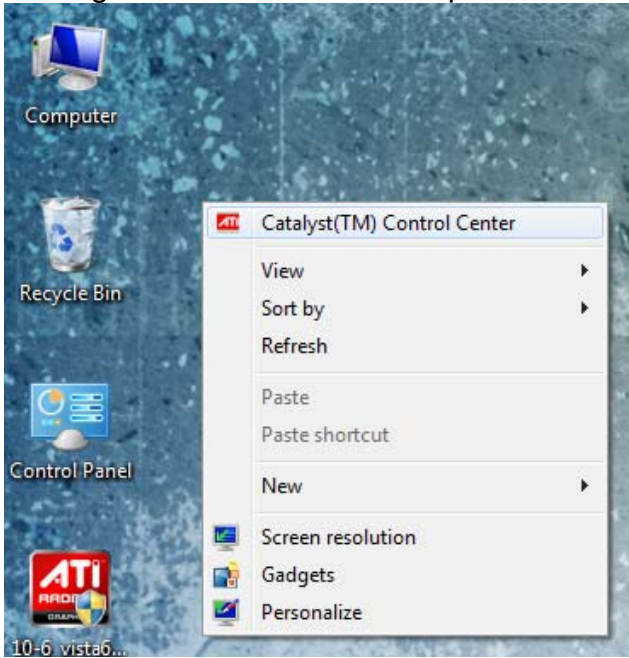
To fix this issue, you need to change the graphic card scaling settings. For Radeon graphic cards, this particular graphic card setting is buried deep in their utility, it took me a while to find it.

Of note: **Radeon apparently underscans only on the digital DVI/HDMI outputs at 1920x1080 on Windows 7.** This is the case on the HD 4550 and HD 5450 graphic cards, and probably others from Radeon. On the 5450 card we tested, the issue does not happen on Windows XP, it does not happen at smaller resolutions, and it does not happen on analog VGA outputs. I suspect this is also the case for other Radeon graphic cards.

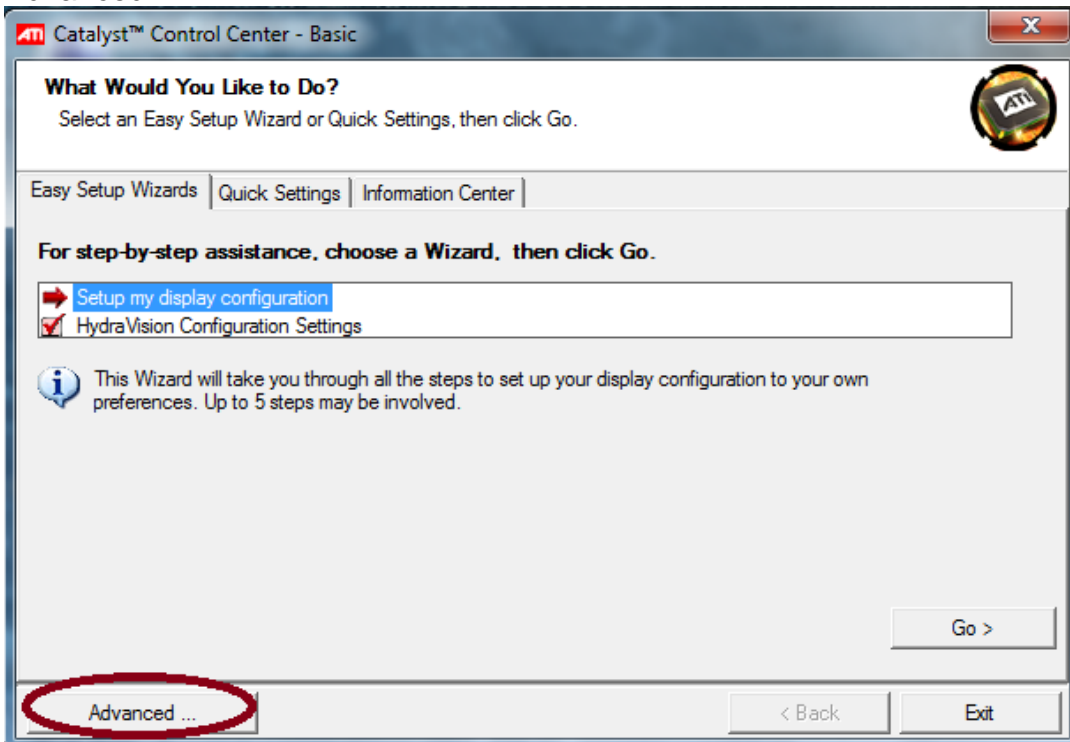
HOW TO CORRECT UNWANTED OVERSCALING/UNDERSCALING ON RADEON GRAPHIC CARD:

Install Radeon's utility Catalyst Control Center (CCC) on your PC. Chances are good if you have the graphic card on your PC, that you already have this software installed too. The Catalyst Control Center version in this document is 2010.0527.1242.20909

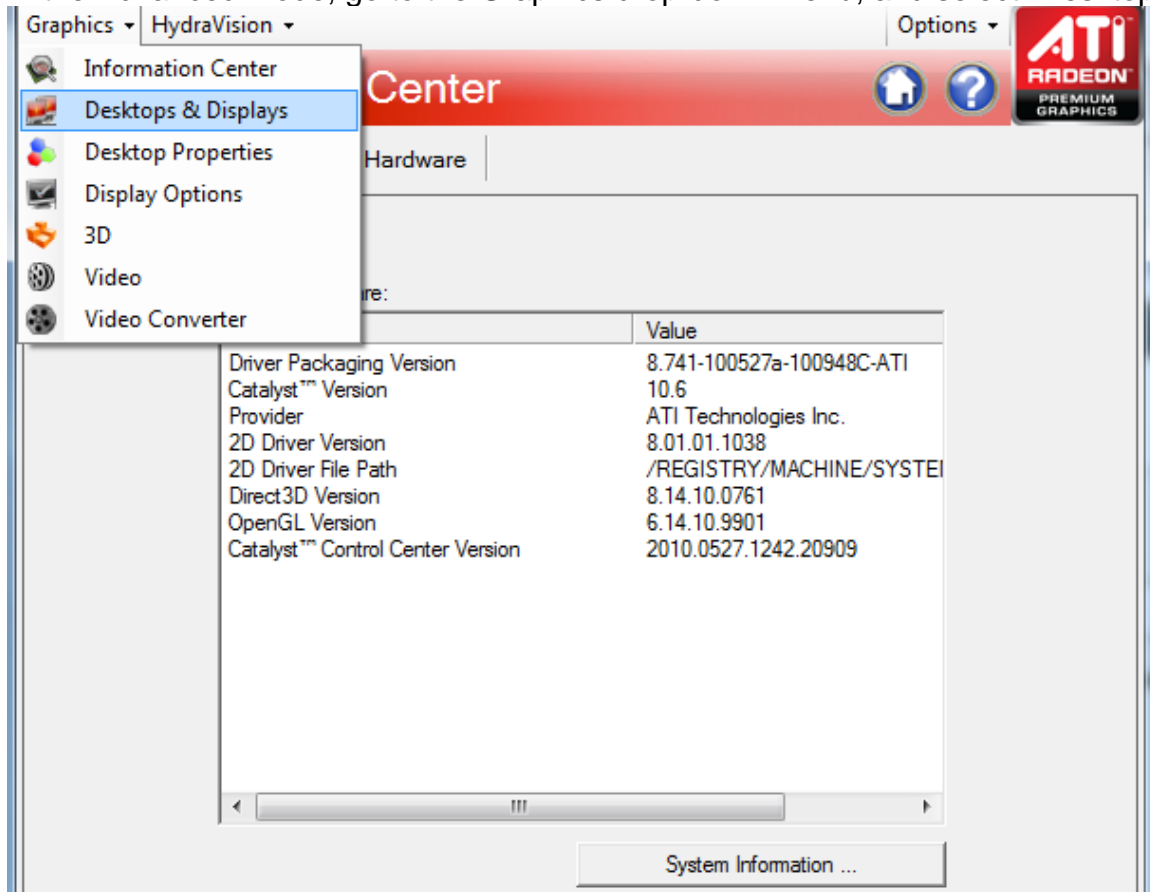
Start the Catalyst Control Center (CCC). Usually you can find it in the drop-down menu when right-clicking on the Windows desktop



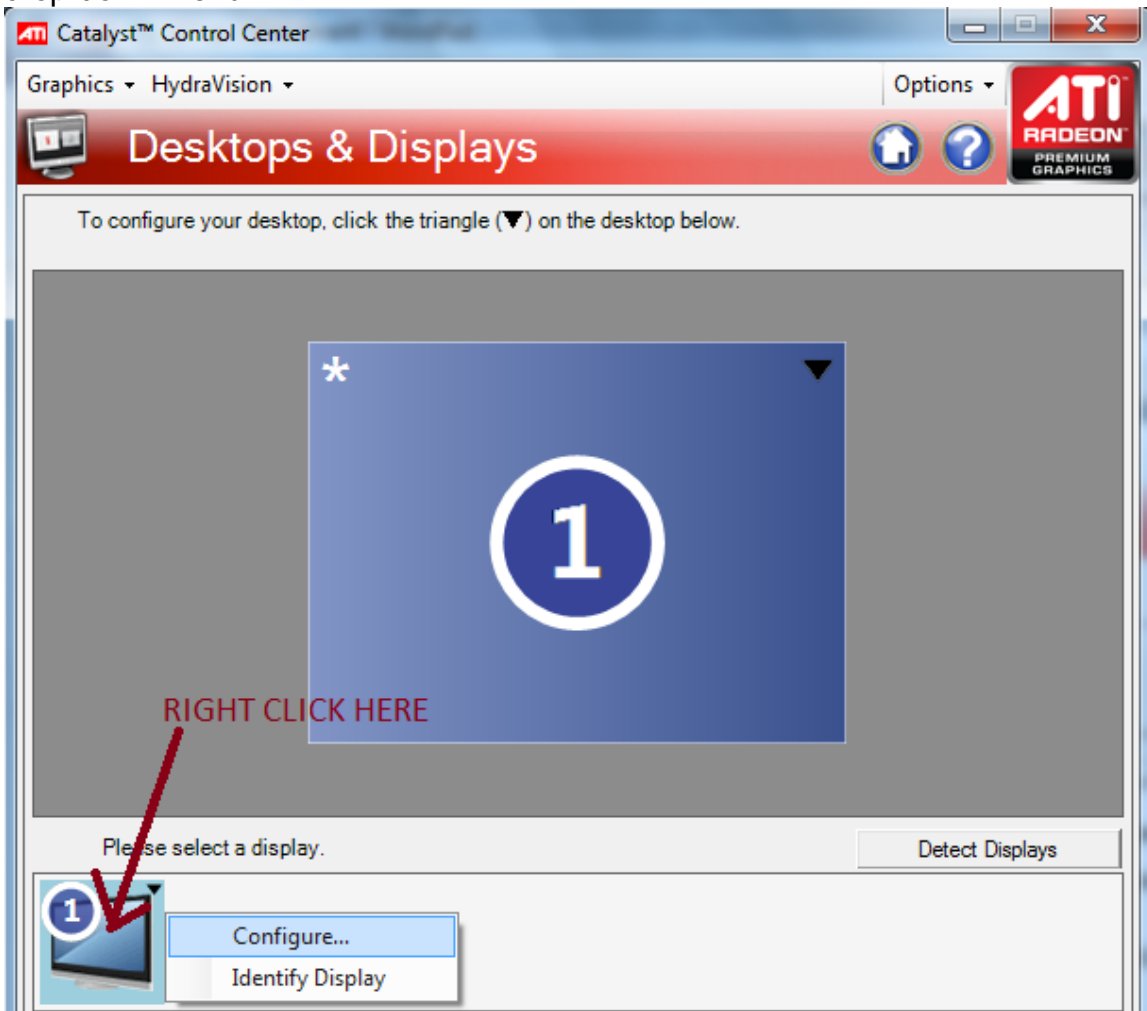
The CCC is run in two modes – Basic and Advanced. If you started in the Basic mode, switch to Advanced:



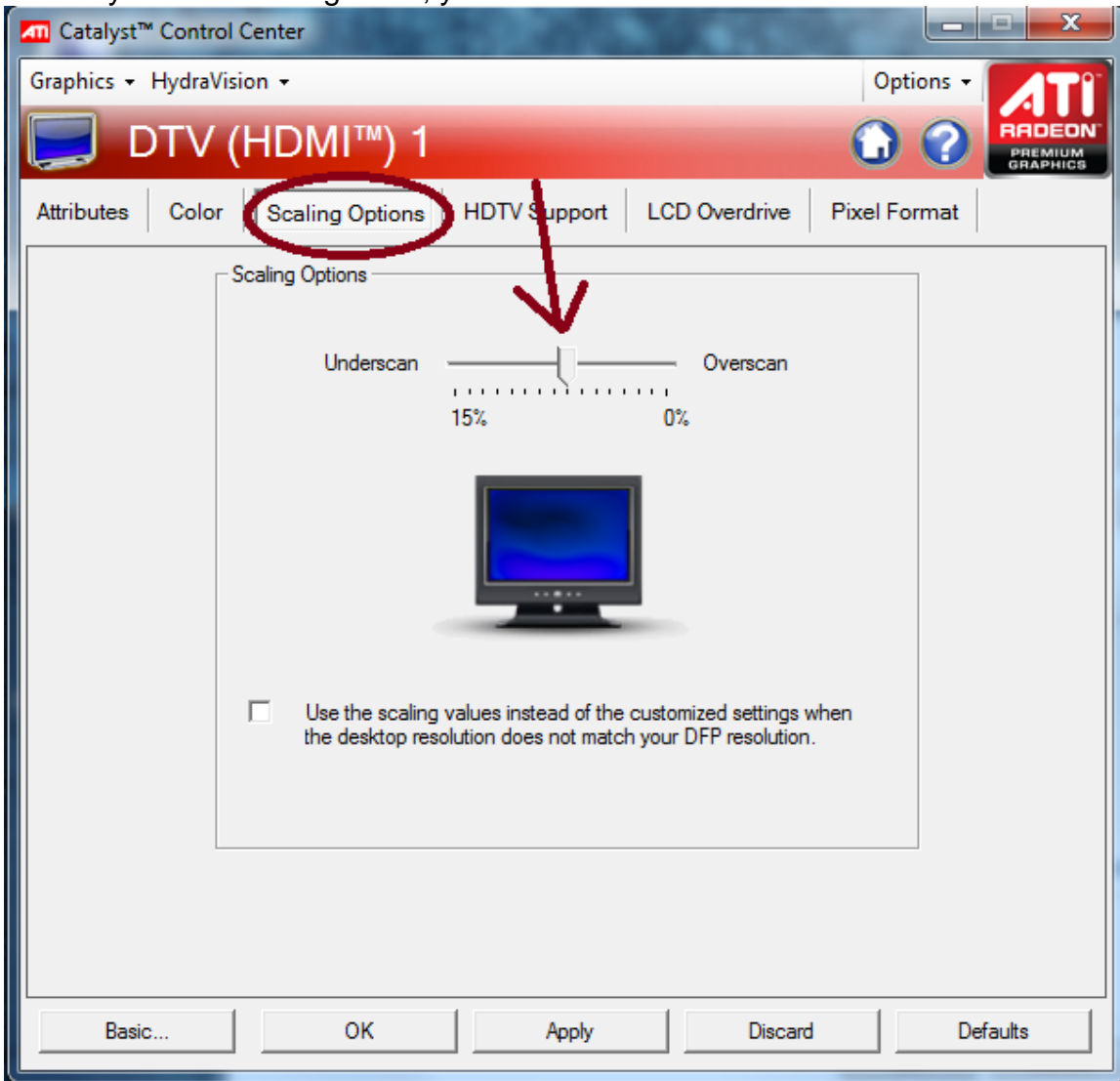
In the Advanced mode, go to the Graphics drop-down menu, and select “Desktops & Displays”:



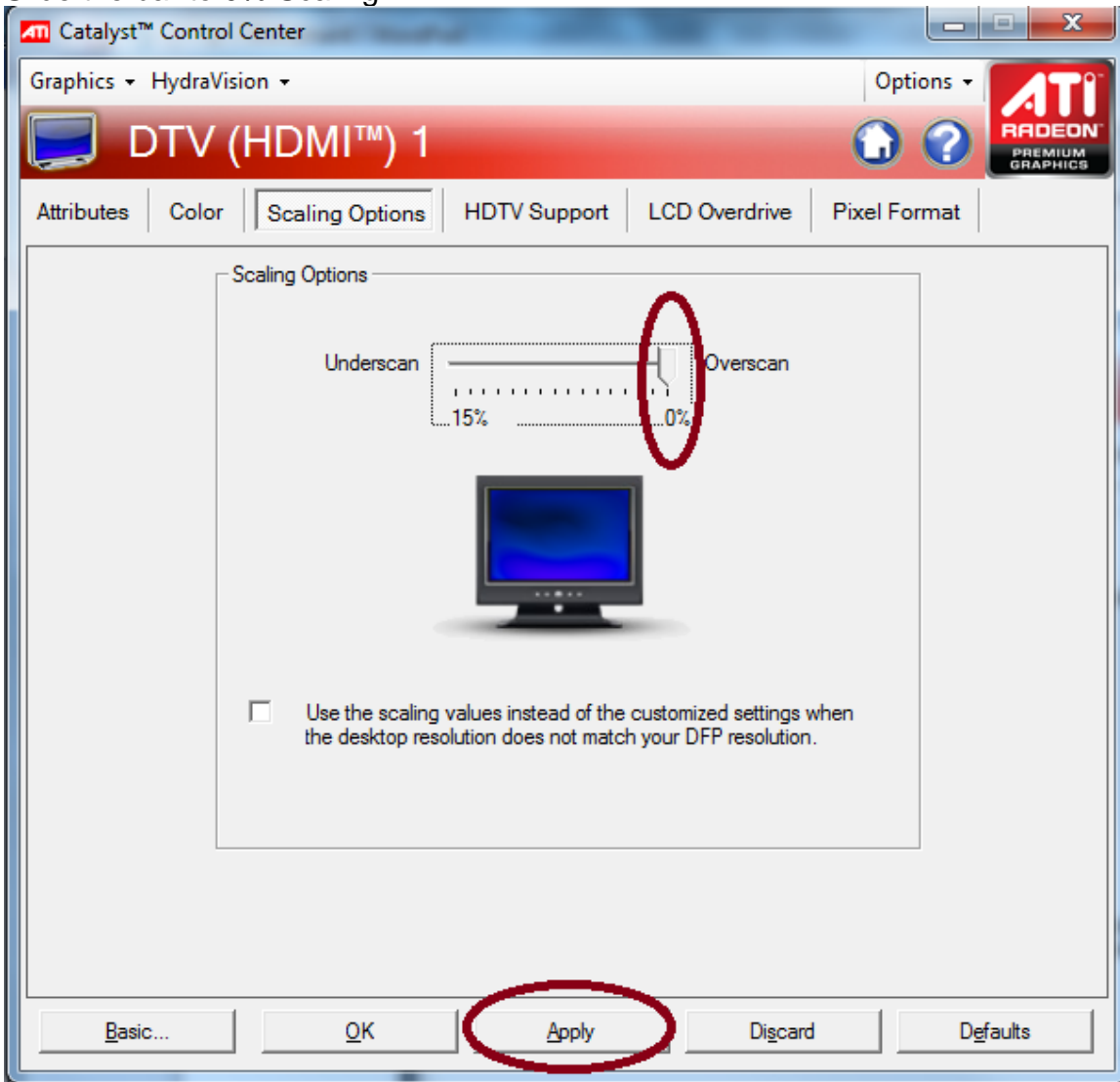
This menu allows you to make some adjustments on each display connected to the graphic card. In this example I have only one display connected. In the window on the bottom, right-click on the connected monitor whose graphic card scaling you want to change, and select "Configure..." from the drop-down menu.



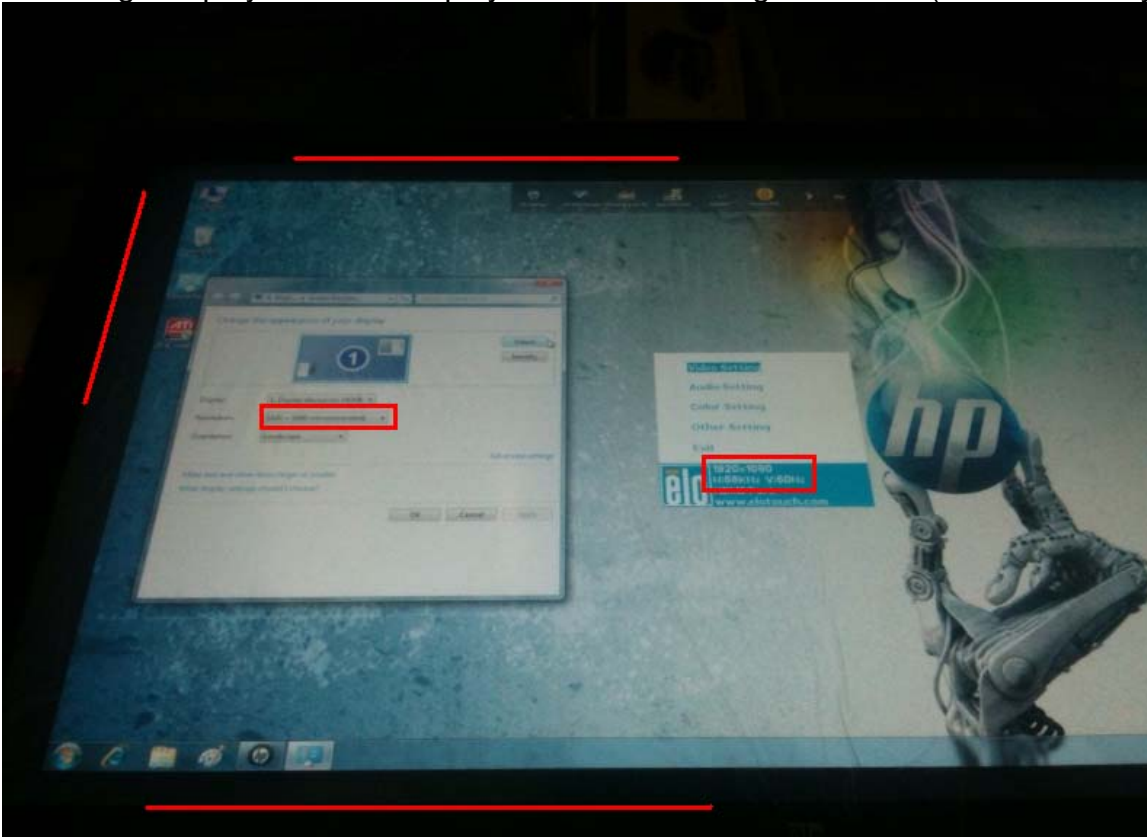
The Configure menu for this display will show. Select the "Scaling Options" tab. If your display currently has the scaling issue, you should see that the slider bar is not set to 0%.



Slide the bar to 0% Scaling.



The image displayed on the display should now change from this (underscaled by the graphic card):



To this (no scaling performed by the graphic card):

