All settings are automatically applied by the NVIDIA® drivers upon computer startup. NVmax will automatically detect whether your settings are different from defaults and if so will automatically set the NVIDIA® drivers to load them.

To reset the color controls reselect 'All Colors' from the drop down menu.

NVmax runs along side the NVIDIA® drivers and does not need to be running to apply settings. One of the only programs that does this; NVmax can apply your settings with no extra memory usage of a third party program. You can simply apply the settings and exit.

This problem usually occurs when your video core is set too fast and is generating more heat then can be dissipated. Either try better cooling or relax the speed to a lower value.

When video memory is clocked too high it will display white particles that look like snow and will be prone to crashing. You will need to relax the speed to a lower value. Heat dissipation will not normally effect the speed at which memory will run and is depends upon the memory rating in nano seconds.

The equation below will give you the rated speed that your video memory will run safely at. You can usually over-clock this further to give added bandwidth.

1000 / SPEED IN NANO SECONDS = XXX MHz
ie 1000 / 3.7ns = 270MHz
remember that if using DDR it is double transfer so 270 * 2 = 540MHz

See your video card specification for the memory speed.

This program uses functionality of the NVIDIA® drivers. There are problems with some drivers enabling overclocking / color control on computer start-up and you may need to update to a newer driver revision before this function will work correctly.

There are compatibility problems with some systems when enabling fast-writes on some VIA motherboard systems. If you encounter this problem run Windows in safe-mode and use restore settings in NVmax to remove the enabling feature from your system.

Unfortunately there is no easy answer to this question. Functions such as anti-aliasing and anisotropy will effect all applications so these should be the ones to try tweaking first.

The accelerated graphics port increases the bandwidth between the mainboard chipsets and the video card. The PCI system that it replaced had a maximum bandwidth of 264mb/s and quickly became a bottleneck as other components of the system increased in speed.

AGP increased the bandwidth first by two fold (2X) at 528mb/s and later four fold (4X) at 1.06Gb/s. Recently this has been increased even further to eight fold (8X) at over 2.1GB/s. AGP allows programs that process a lot of data, such as games, to run much faster.

Fast Writes was introduced when it became apparent that the transfer of data through main memory was creating a new bottleneck. Fast Writes bypasses the transfer of data through the main memory allowing the data to flow quicker. Although memory bandwidth has increased those with SDR memory may see a theoretical 70% increase in speed by enabling Fast Writes, although this is usually much lower. Fast Writes requires a very accurate AC timing specification and causes lockups on many mainboards that do not have this support. Some mainboard manufacturers let you modify the strength and offset in the bios in order to resolve stability issues. Some video card manufacturers disable this function in the bios of the video card because of this instability. You may be able to get a bios update that includes support if it doesn't already.

Side Band Addressing accelerates small packets of data over the bus resulting in greater speed where small rapid data transactions take place. Many video card manufacturers disable this function in the bios of the video card because of instability when enabled on the system. You may be able to get a bios update that includes support if it doesn't already.

NVmax sets these functions in the NVIDIA® registry. Other devices or software may override these settings. Such examples are the video or mainboard bios and you may need to use these in tandem with NVmax before your system will enable these technologies.

The order of an object in relation to other objects is known as the Z formation. Whether an object appears on top, or behind an object is an example of its Z order. The higher the Bit of a z-buffer the more memory is allocated to store its position. If a lower memory space is allocated that is lower than the actual data then the exact position will not be stored and a near point must be used. This can cause graphical glitches.

Although you can not control the order you can control some parameters of the function such as the ability to force and disable them. This can be useful if an application uses a lower depth buffer and does not allow selection of higher modes. Alternatively you could force a lower depth buffer if an application uses a higher mode and runs slower.

The synchronization of rendered frames to the monitor is called vertical sync. When you run an application a certain FPS is induced by the rendering software, be it DirectX or OpenGL. This frame rate depends upon your system and its hardware. Ideally, this FPS would exactly the same as the refresh rate you have your monitor set too, such as 70Hz. That would mean an induced FPS of 70 would be required.

During games your monitor will be set to 60Hz refresh rate and v-sync will limit the FPS to 30 - half of the refresh rate. This will result in no visual banding however if your computer was rendering 45FPS motion may appear less smooth and the end result being less playable.

You can also specify the amount of frames to render ahead when V-Sync is activated. This can help levitate lower performance since a buffer is created in video memory for when the FPS would normally lower in a scene.

OpenGL screen buffer flipping technique can also be changed. The default and recommended mode its auto.

Setting the core and memory speed of your card at a higher value will usually result in higher performance. Be warned though that this will result in more heat being generated and thus standard cooling may not be enough to get maximum performance from the chip - some users purchase higher power coolers. Whilst cooling can determine the speed of a chip it is also limited by its manufacturing process (which determines the heat generated) and for memory the speed measured in nano seconds (ns). When clocking if you do not cool the chip down enough it will become unstable and prone to crashing or in the worst case damage. It is recommended you do not over clock unless you know your hardware limits.

Core and memory speed are set using and in tandem with the NVIDIA® drivers. Any third party software that uses a different method, such as low level hardware programming will not be compatible and may cause instability when used at the same time.

In order to apply your settings when Windows starts NVmax automatically controls the NVIDIA® drivers so that they initialize upon startup. Setting the clock controls to defaults will disable this feature.

A texture, also called a mipmap is a bitmap stretched to fill an area of space. You can define the Direct3D *Level of Detail (LOD)* for a texture. This will affect the rendering quality and can adversely affect performance. The highest quality will be a value close to 0, with quality decreasing as this value extends towards 2. Negative values can also give better quality. This will change depending on the application being used. User mipmap adjustment, which was a feature in previous versions of NVmax is now automatically controlled in version 4.0 and above.

The texel origin in Direct3D defines the way pixels are positioned. By default the value is 3 and conforms to DirectX standards however you may need to change this if text looks corrupt or distorted. Doing so will improve overall image quality.

Some applications request use of S3TC version 1 texture compression in OpenGL and as a result will show graphical corruption such as blocky textures and color banding. Using the Force S3TC v3 Compression feature will force applications to use texture compression version 3 for all-round improved performance. The default value is off however it is recommended you turn this feature on.

Texture filtering plays a big part in improving the quality of mipmaps on screen. You may use NVmax to set different levels of filtering depending on whether you want maximum quality or performance.

Nearest Point is the fastest form because no filtering is used on the texture.

Bilinear takes four pixels from around the pixel and calculates an average color value for them. This color value is then merged into the pixel being filtered. This mode is also known as bilinear 4-Tap filtering.

Trilinear takes eight pixels from around the pixel and calculates an average color value. Since more pixels are taken into account the average color value will be more accurate. This is then merged into the pixel being filtered. This mode is also known as trilinear 8-Tap filtering and because it uses twice the pixel count as Bilinear it uses twice the bandwidth and is therefore slower.

Anisotropy takes pixels from a pre-defined shape that can adapt and match the texture map environment. The shape can change for better texture suitability. The tap mode determines the amount of pixels that will be averaged. Since Anisotropic filtering uses a high amount of pixels and extra shape calculations the amount of processing power is much higher. Subsequently higher modes are only available on GeForce 3® cards or better. Anisotropic filtering improves texture quality by sampling and averaging pixel values to get rid of such blurriness. You can choose the amount of samples to take. Higher modes (32 and 64 tap, Level 4 and 8 respectively) are only available on GeForce® 3 cards or better.

"Anisotropic texture filtering, through whatever mechanism it is implemented, is the process of sampling a texture function with a reconstruction filter that is narrow and long in texture space. A typical manifestation of the problem is that a textured polygon rotated nearly edge-on with respect to the image plane will be blurrier than it should be. " - Cass Everitt – NVIDIA® Corporation

Anti-Aliasing is a technique used to smooth the edges of objects in a scene to reduce the jagged "stair step" effect sometimes seen. Using default anti-aliasing modes the image is rendered at a higher resolution and then scaled down. Quincunx, introduced on the GeForce® 3 uses super-sampling so that the high memory requirement is not required, however texture quality is slightly reduced. Many applications choose to control the mode themselves but you can manually override the application.

Unlike previous versions of NVmax with version 4 and higher anti-aliasing is automatically forced should you set a mode other than auto.

Higher anti-aliasing modes including filtering techniques are only available on GeForce 3® or better cards.

Presets allow you to define custom settings for quick import at a later time.
There are two systems automatically handled by the program as explained below:

:: You can select an application to run when the settings are imported. If you do this the settings will be applied and then reverted when the application ends. This means you can define settings for different applications.

:: If you do not specify an application then the settings will be imported and the program will not revert your settings.

NVmax detects your current settings and gives you the option on what to store including; color settings, clock speeds, DirectX and OpenGL settings and Overlays.   For safety NVmax will not store your system settings (AGP etc).

You can change the settings of your colors on-screen using these controls. This can help for color correction on certain devices.

You color display settings are stored in presets for use with applications meaning you can use different brightness levels for playing various games.

Digital Vibrance is a feature of the GeForce® 2 MX and 3 series and enhances the colors on screen for greater clarity. This feature is not available on other cards.

Because systems vary in internal hardware and software, such as different operating systems and video cards in can be difficult to support all solutions without having problems with other machines. These settings will allow you to fix incompatibilities with your system for various problems.

DirectX

:: Fog Table Emulation: Support for applications that incorrectly query D3D capabilities and expect table fog support. You should enable this feature by default as many programs will fail to work or will give a pink screen without it.

:: Show 'Powered By NVIDIA® Logo': This will place a NVIDIA® logo at the bottom right hand side of the screen. Its sole purpose is to demonstrate that the application is using NVIDIA® hardware acceleration and is useful for demonstrations. By default this feature is turned off.

OpenGL

:: Buffer Region Extension: Increase the performance of applications that use the GL_KTX_buffer_region OpenGL extension. The default value is enabled. It is not recommended that you disable this feature.

:: Buffer Region use Video Memory: This allows the use of local video memory when the GL_KTX_buffer_region extension is enabled. *Buffer Region Extension* must be enabled and you will need a minimum of 8mb local memory free. The default value is enabled.

:: GeForce Compatibility Some applications do not work correctly with Quadro cards or work better when detected as a GeForce. You can use this feature to force detection as a GeForce. It is disabled by default and recommended only if your Quadro card fails to work in programs that request a GeForce before acceleration can be enabled.

:: GeForce Accelerated Lines: By default accelerated line drawing of wire frame applications is disabled on hardware other than Quadro based cards. You can enable this feature on GeForce based cards to receive a performance boost in applications such as cad and with no side effect.

:: Single Depth Buffer: Some high end 3D modeling software operate faster by drawing content straight to the screen and bypassing the operating system altogether (Hardware Overlay). By default this feature is not supported by NVIDIA® based cards/drivers however you can enable manually for a performance boost.

:: Force Generic CPU: Selecting this option will disable processor enhanced acceleration such as SSE and 3DNow! You should only enable this function for compatibility with older applications or if you experience lockups. Enabling will result in a lower 3D performance. This feature is disabled by default.

:: TNT2 Compatibility: This will disable any use of hardware transform & lighting acceleration, anti-aliasing or large texture support. Whilst this may solve compatibility with some software it may drastically effect performance of others since software emulation most be used and is slower. This feature is disabled by default.

:: Allow StereoVision API: Applications which support stereovision and when used in conjunction with stereo glasses (red and green filtered lens) will give a new depth of 3D immersion. Use this feature to turn stereovision on.

:: Overlay support: An overlay is a portion on the screen which is drawn on top of Windows®, bypassing common API calls and interaction with the GUI. This makes graphic drawing used for games faster. You can enable support for Overlays in OpenGL using this option.

:: Force 16 Bit Z-Buffer may help alleviate artifacts when 16 Bit color mode is used with games. The Z Buffer, also called a depth buffer controls whether an object is behind or in front of another. Forcing 16 Bit Z Buffer will offer better performance over applications that use a 24 Bit Z-Buffer by default, however complex applications usually need the full storage space a 24 Bit value provides and in such a case forcing a 16 Bit value will cause artifacts.

:: OEM NVIDIA® Control Panel: Disable this feature if you want to view or use overclocking and other hardware features (if available) from within the NVIDIA® control panel. The default is OEM mode enabled.

:: Intel Compatibility: You can use this feature to fix problems with Intel Pentium processors and supporting motherboards whereby you experience lockups or desktop stalls. This feature is disabled by default.

:: Do IO to Flush Cache: You can use this feature to fix problems with Ali mainboards where the computer experiences lockups or desktop stalls. This feature is disabled by default.

:: Windows 2000/XP + Athlon fix: Apply the official Microsoft / AMD patch for Windows 2000 and Athlon / Duron processors. This feature prevents memory corruption that results in lockups. It is disabled by default and should only be enabled if you experience problems in Windows 2000 that were not encountered in 9x/ME. For more information on this feature search the Microsoft® knowledge database.

:: Hardware Accelerated Cursor: Windows 2000 and XP systems generate special effects around the screen cursor such as shadow and alpha blending. These effects are normally accelerated by DirectX and use the power of your hardware for full acceleration. On some systems, noticeably TNT2 based, this will generate the icon in a black box. If this occurs you can disable this feature to solve the problem.

:: BSOD 'infinite loop' is a driver memory registrar issue with Detonator 23.xx and above which causes a hard system lock. Setting this option should avoid the 'infinite loop' message by disabling new internal coding.

NVmax has a built in auto driver updater that will locate the latest NVIDIA® detonator drivers by requesting data from nvmax.com. You will then me given a choice of downloads and by clicking Install NVmax will automatically download and install the package. During this time you won't be able to interact with NVmax and the program icon will go red.

There is no security risk using this feature as data is not uploaded. Microsoft Internet Explorer 3.0 or better is required for this feature to work. NVmax and its associated partners accept no liability for any drivers downloaded. Please see your license agreement for further details.

If you encounter the error that NVmax could not contact the server make sure your internet connection is valid and that you are able to download and save files. It will take a couple seconds to download and parse the server list. If the program stalls whilst doing this do not terminate the program.

An overlay is a portion of space defined to an application, which draws into this space 'on top' of any other Windows® program. The application has direct access to the video card memory buffer so bypasses Windows® common GUI functions. Many programs now use this feature, including DVD and TV systems. Using these controls you can control the appearance such as correcting the brightness on low brightness DVD titles.

The overlay controls are applied in real time, but you must be running a overlay application to be able to see the effect.