NVIDIA Control Panel for NVIDIA RTX Enterprise Drivers - Release 470

User's Guide

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Chapter 1. Introduction

This quick start is addressed to users of the NVIDIA® Control Panel software. This guide focuses on getting you up and running with your NVIDIA software.

For technical details on the features and benefits of the NVIDIA Control Panel software and details about supported products, drivers, and other software, refer to the NVIDIA web page — www.nvidia.com.

This chapter discusses the following major topics:

- "About the NVIDIA Control Panel" on page 2
- "Getting Support and Information" on page 5

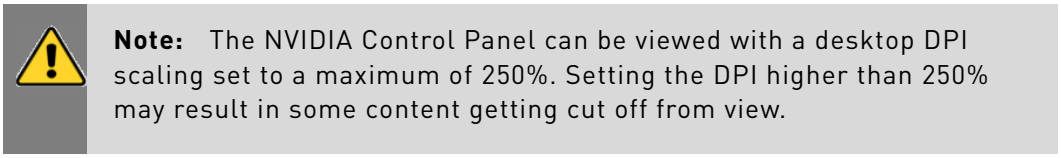
About the NVIDIA Control Panel

Welcome to the NVIDIA Control Panel, designed for Microsoft® Windows®. You can use NVIDIA Control Panel to control your NVIDIA hardware and access other NVIDIA software installed on your system.

Overview

In addition to setting up basic display configurations such as display resolution, refresh rate, and multiple display use, you can:

- Tune your 3D settings with real-time preview to maximize performance or image quality
- Customize how 3D applications work in your system
- Adjust your screen colors and contrast
- Set custom timings
- Control video image settings
- Change your HDTV format
- Control special workstation features such as Frame Synchronization.



Note: The NVIDIA Control Panel can be viewed with a desktop DPI scaling set to a maximum of 250%. Setting the DPI higher than 250% may result in some content getting cut off from view.

Supported Operating Systems

NVIDIA Release 470 Quadro professional drivers are available for the following Microsoft® Windows® operating systems:

- Windows 10 64-bit
- Windows Server 2012 R2 (64-bit)
- Windows Server 2016 (64-bit)
- Windows Server 2019 (64-bit)

Refer to the release notes for specific operating system support for individual driver versions.

Supported NVIDIA Products

Refer to the release notes and NVIDIA driver download site for the list of products supported by the driver version that you have installed on your computer.

Supported Languages

The NVIDIA Graphics Driver supports the following languages in the NVIDIA Control Panel:

English (USA)	German	Portuguese (Euro/Iberian)
English (UK)	Greek	Russian
Arabic	Hebrew	Slovak
Chinese (Simplified)	Hungarian	Slovenian
Chinese (Traditional)	Italian	Spanish
Czech	Japanese	Spanish (Latin America)
Danish	Korean	Swedish
Dutch	Norwegian	Thai
Finnish	Polish	Turkish
French	Portuguese (Brazil)	

Getting Support and Information

Online Help

- To open the online help, either :
  - Press F1 on your keyboard, or
  - Select Help from the NVIDIA Control Panel menu bar and then select NVIDIA Control Panel Help.
- Help on various topics can be viewed using the Contents, Index, or Search tabs.

Technical Support

To access the NVIDIA Technical Support web page go the following web address:

http://www.nvidia.com/page/support.html

System Information

You can get detailed information about your system and the NVIDIA Control Panel configuration as well as version and copyright information.

- To view copyright and version information about the NVIDIA Control Panel:

  From the Help menu, select About NVIDIA Control Panel.
- To view detailed system information:

  Open the System Information dialog box by either selecting System Information from the Help menu, or by clicking the System Information link at the lower left corner of the NVIDIA Control Panel.

  Click any of the tabs in the System Information dialog box.

Chapter 2. Understanding the NVIDIA Control Panel

This chapter describes the NVIDIA Control Panel in the following sections:

- "Opening and Closing the NVIDIA Control Panel" on page 7
- "About the NVIDIA Control Panel Interface" on page 8

Opening and Closing the NVIDIA Control Panel

Opening the NVIDIA Control Panel

Note: The NVIDIA Control Panel can be viewed with a desktop DPI scaling set to a maximum of 250%. Setting the DPI higher than 250% may result in some content getting cut off from view.

To open the NVIDIA Control Panel, right-click the desktop and then select NVIDIA Control Panel.

Closing the NVIDIA Control Panel

To close the NVIDIA Control Panel,

- From the File menu, select Exit, or
- Click the Close box in the upper right corner of the program window.

About the NVIDIA Control Panel Interface

The NVIDIA Control Panel provides an easy-to-use interface for managing your system.

When you start the program for the first time, the NVIDIA Control Panel opens to the first page listed in the navigation tree. On subsequent visits, the control panel reopens to the last page visited. The NVIDIA Control Panel user interface consists of these main areas, as shown in and Figure 2.1:

- Main Task Area
- Select a Task (Navigation tree)
- Menu bar
- Toolbar

.

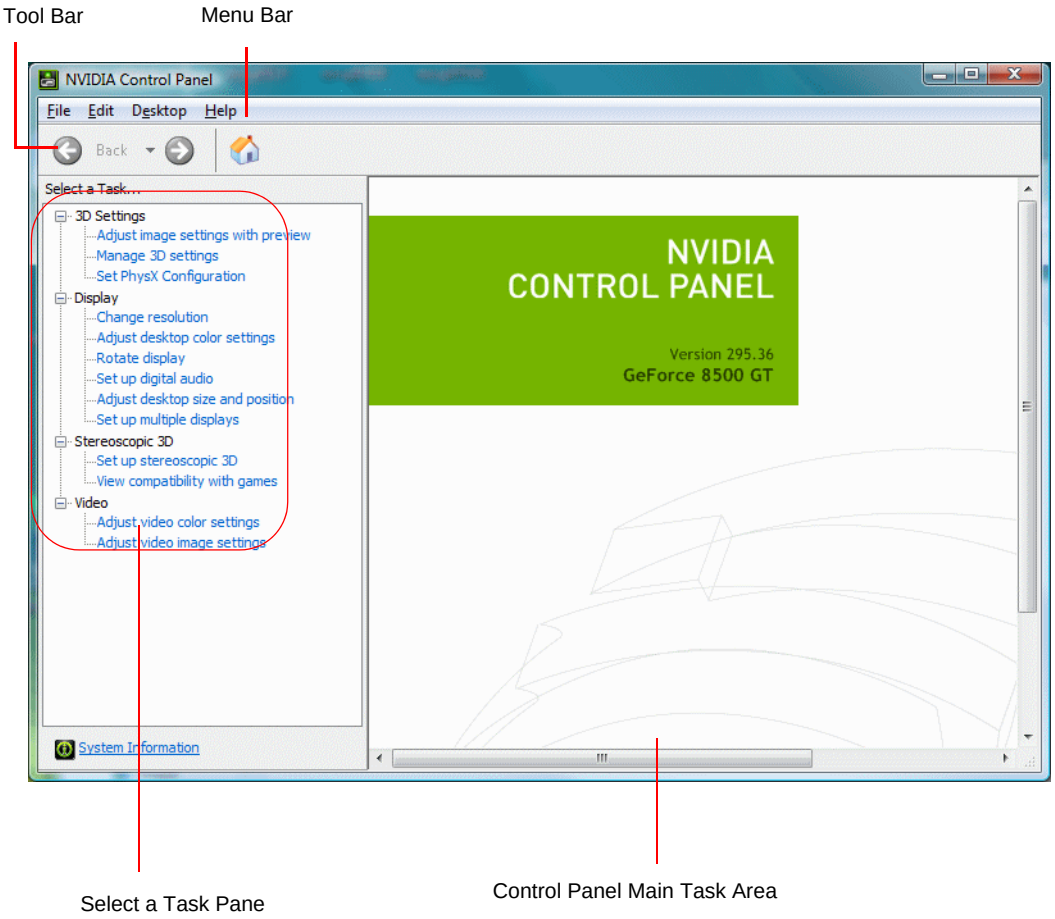


Figure 2.1 NVIDIA Control Panel

Using the Main Task Area

The main task area, in the right pane, displays the application task pages. This area of the screen is where you will focus most of your attention as you use the NVIDIA Control Panel to accomplish your goals. You can access specific pages using the navigation tree in the Select a Task pane.

Depending on your PC manufacturer, there is a Welcome page that appears the first time you open the NVIDIA Control Panel after installing the driver. On subsequent visits, the control panel reopens to the last page visited.

Using the Select a Task Pane

The navigation tree in the *Select a Task* pane shows all the primary NVIDIA Control pages that are installed on your system.

The pages are grouped according to the same categories that existed in the previous version of the NVIDIA Control Panel.

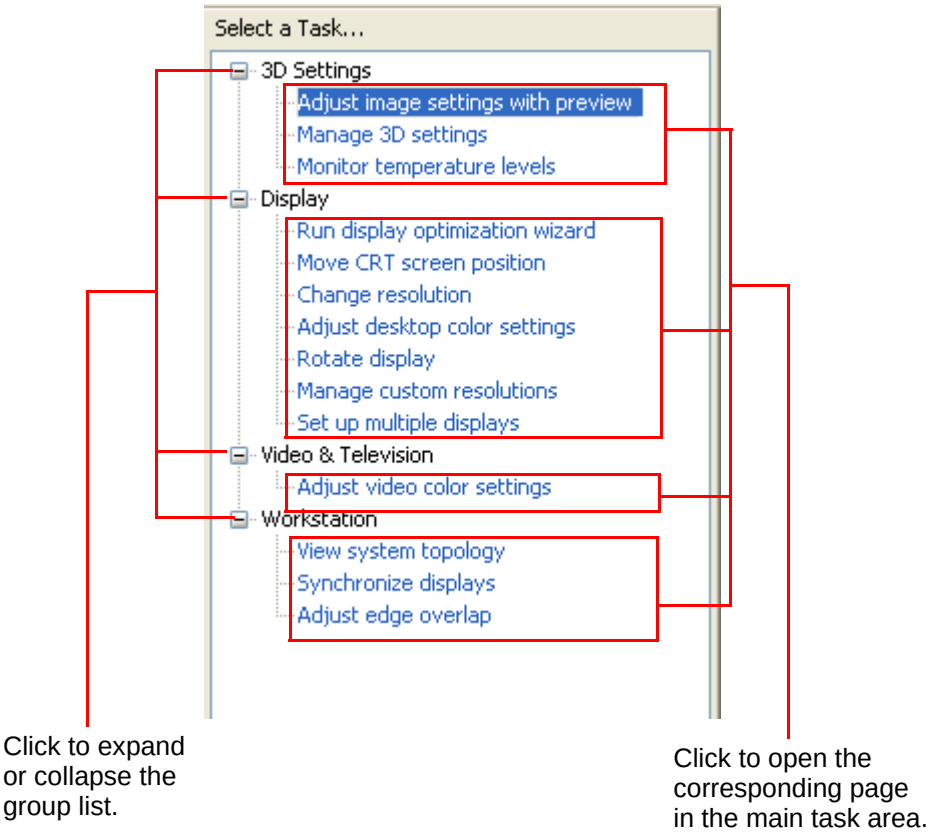


Figure 2.2 NVIDIA Control Panel Select a Task pane

Using the Tool Bar

The *Toolbar* provides quick back and forth navigation between pages. The back and forward buttons let you navigate sequentially among pages that you have visited.

You can also navigate directly to a previously visited page by clicking the list arrow next to the back button. The drop-down menu lists all the previously visited pages in the queue. Click the page that you want to open.

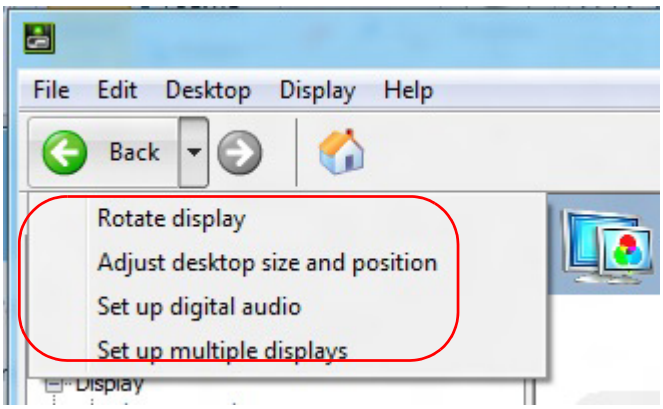


Figure 2.3 Navigation History Menu

Using the Menu Bar

The *Menu bar* contains standard Windows menus and menus specific to the NVIDIA Control Panel, such as the View and Profiles menus.

Menus that are available on the menu bar may vary, depending on the NVIDIA Control Panel group (such as, Display, Mobile, 3D Settings, or other group) you are using.

File Menu

Commands related to printing, applying changes, and exiting the program are available on the File menu.

Table 2.1 File Menu Commands

File Menu Command	Description
Page Setup ...	Set up the current task page for printing. This control may not be available.
Print...	Print the current task page. This control may not be available.
Print Preview....	Preview the page before sending it to the printer. This control may not be available.

Table 2.1 File Menu Commands

File Menu Command	Description
Exit	Close the NVIDIA Control Panel program.

Edit Menu

Commands related to cutting, copying, pasting, and selecting items are available on the Edit menu.

Table 2.2 Edit Menu Commands

Edit Menu Command	Description
Cut	Cut the selected text and place in the clipboard. This control may not be available.
Copy	Copy the selected text and place in the clipboard. This control may not be available.
Paste	Paste the text currently in the clipboard to the location of the Windows cursor. This control may not be available.
Select All	Select all items on the current page. This control may not be available.

Desktop Menu

Commands related to viewing the various pages in the NVIDIA Control Panel application modules are available on the Desktop menu.

Table 2.3 Desktop Menu Commands

View Menu Command	Description
Add Desktop Context Menu	This is selected by default, and adds the NVIDIA Control Panel menu item to the desktop context menu.
Enable Video Editing Mode	Select this option to improve the video playback experience for some video editing applications.

Table 2.3 Desktop Menu Commands

View Menu Command	Description
Add "Run with graphics processor" Option	Select this option to add "Run with graphics processor" to the program context menu. When this option is selected, you can choose which graphics processor to use when starting a program as follows: 1. Right-click the program icon. 2. Click Run with graphics processor and then click the graphics processor to use. The selection applies only at the time the program is launched. **NOTE**: This menu option appears only with systems using NVIDIA © Optimus™ technology. **NOTE**: This menu option will not appear with WIndows 10 May 2020 Update and later. **NOTE**: Some programs require elevated user privileges in order to use the "Run on graphics processor" option from the program's right-click menu. A pop-up dialog will let you know if that is the case. In this case, use the controls in the NVIDIA Control Panel->Manage 3D Settings page to select the graphics processor.
Display GPU Activity Icon in Notification Area	Select this option so that the GPU Activity icon appears in the Windows notification area of the taskbar. You can then click the icon to see which programs and displays are using the NVIDIA GPU. NOTE: This menu option appears only with systems using NVIDIA® Optimus™ technology.

Help Menu

Commands related to accessing help, system information, and copyright and version information are available on the Help menu.

Table 2.4 Help Menu Commands

Help Menu Command	Description
NVIDIA Control Panel Help	Access the NVIDIA Control Panel online help.
System Information	View detailed information about your system and the NVIDIA Control Panel configuration.
Debug Mode	Removes all overclocking performance and power settings.
About NVIDIA Control Panel	View NVIDIA Control Panel version and copyright information.

Group-Specific Menus

These menus appear only when pages from a specific group are open.

Display Menu

This menu item appears only when a Display group page is open.

Table 2.5 Display Menu Commands

Display Menu Command	Description
Identify Displays	Select to identify the displays configured with your system.
Show G-SYNC Visual Indicator	Select to verify that NVIDIA G-SYNC is being used. Depending on the type of monitor connected, the menu item could state Show indicator for G-SYNC, Show indicator for G-SYNC Compatible, or Show indicator for G-SYNC/G-SYNC Compatible

3D Settings Menu

This menu item appears only when a 3D Settings group page is open on an SLI system.

Table 2.6 3D Settings Menu Commands

3D Settings Menu Command	Description
Show SLI Visual Indicators	Select to verify that SLI rendering or SLI antialiasing is enabled and working.
Show Multi-GPU Visual Indicator	Select to verify that multi-GPU rendering or multi-GPU antialiasing is enabled and working.
Show PhysX Visual Indicator	Select to verify the type of PhysX acceleration the game is using - CPU or GPU - or if PhysX acceleration is being used at all.

Workstation Menu

This menu item appears only when a Workstation group page is open.

Table 2.7 Workstation Menu Commands

Workstation Menu Command	Description
Refresh View	Select to refresh the graphical representation of the displays and graphics cards installed on your system.

Chapter 3. Accomplishing NVIDIA Control Panel Tasks

The NVIDIA Control Panel provides an intuitive layout for locating graphics driver controls, including most of the controls that were available with the Classic NVIDIA Control Panel.

- "NVIDIA Control Panel Feature List" on page 15 lists the current features available in the NVIDIA Control Panel.
- "NVIDIA Control Panel Groups" on page 23 provides an overview of the NVIDIA Control Panel pages by group.

NVIDIA Control Panel Feature List

Note: With Optimus systems under Windows 10, the Display controls are not available if no display is connected to the NVIDIA GPU. This is because clone mode across display adapters is handled by the Windows OS and not by the NVIDIA driver.

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Display/TV Controls		
Mode control		
Resolution	Non-HD display - the native resolution or the highest safe resolution from the monitor EDID is the default. HD display - the highest progressive resolution is the default.	
Refresh rate		

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Custom timings/resolutions		
TV Signal Format Selection	M/NTSC, PAL, M/PAL, N/PAL, Select by country	
Connector Selection	Auto-select, DVI VGA S-Video - SDTV, Component Composite - SDTV, HDMI - HDTV (Vista and later), DisplayPort - HDTV (Vista and later), LVDS - laptop display	Available values depend on the actual connection.
Desktop Color depth	Highest (32-bit) Medium (16-bit) HDR (64-bit) WCG (64-bit) SDR (30-bit color) SDR (24-bit color).	
Output Color Depth	8 bpc 12 bpc	Display dependent
Output Dynamic Range	Full (0—255) Limited (16—235)	
Output Color Format	RGB, YCbCr422	For HDMI and DisplayPort connections
Color Control		
Color Accuracy Mode (read only)	**Reference (can be forced vis check box)** Accurate Enhanced	
Brightness	0 - 100%, (50%)	
Contrast	0 - 100%, (50%)	
Gamma	0.50 - 1.50, (1.00)	
Digital Vibrance	0 - 100%, (0%)	
Hue	0 - 359 degrees (30)	For GeForce 8 series and later GPUs
Flicker Filter	0 - 100%, (50%)	For analog TVs

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Gray border option	Disabled	For analog TVs; presents unused black TV borders as gray
Content type (ITC) reported to the display	Auto select, Desktop programs, Full-screen videos, Photos, Movie, Games	Some HDMI displays only - available values dependent on display support
NVIDIA G-SYNC	Enable G-SYNC/G-SYNC Compatible	WIndows 10 and Pascal or later GPUs required for G-SYNC Compatible displays.
Rotation	0, 90, 180, 270 degrees	
Desktop Size and Position		
Move CRT screen position		For VGA displays
Scaling mode	Aspect ratio Full-screen No scaling Integer scaling	TV, VGA (with EDID), Digital displays, LVDS
Scaling performed on	GPU Auto (Display/GPU combination)	
Application Scaling override	Off, On	
Resize		TV, Digital displays
Position		TV, VGA
Multi-display Options		
Single-display mode		
Dualview (extended mode)		
nView Clone Mode		
Smart Clone		
Set Up Merge Displays		WIndows 10 and later
Video Controls	"Use video player settings" is the default. If "Use NVIDIA settings" is selected, the following values apply.	
Color Settings		
Brightness	0 - 100%, (50%)	
Contrast	0 - 100%, (50%)	
Hue	0 - 100%, (0%)	
Saturation	0 - 100%, (50%)	
Gamma (including separate RGB)	0.3 - 3.00, (1.00)	

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Advanced Color Settings		
Dynamic Range	Full (0—255) Limited (16—235)	
Dynamic Contrast Enhancement	Disabled	
Color Enhancement	Disabled	
Image Settings		
Edge Enhancement	0 - 100%, (0%)	
Noise Reduction	0 - 100%, (0%)	
Inverse Telecine option	Disabled	
Internet Video Enhancement option	Disabled	
Digital Audio		
Verify displays that will appear as audio devices in the Windows Sound Settings	For each audio-capable display, select the display or select "Turn off audio".	For GPUs that support digital audio when an HDMI or DisplayPort connection is made.
Portal to the Windows Sound Settings panel		
HDCP		
View HDCP Status (Capability verification page)		For GPUs that support HDCP.
3D Application Controls - Manage 3D Settings		
Preferred graphics processor	High-performance NVIDIA processor, Integrated graphics, Force high-performance NVIDIA processor use, Force integrated graphics use, Auto-select	Optimus systems. Not available as of Windows 10 May 2020 Update.
Ambient Occlusion	Off, Performance, Quality	
Anisotropic filtering	Application-controlled, Off, card-specific settings	
Antialiasing - Mode	Application-controlled, Off, Enhance the application setting, Override any application setting	
Antialiasing - Setting	Application-controlled, card-specific settings	

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Antialiasing - FXAA	Off, On	
Antialiasing line gamma	Off, On	
Antialiasing - gamma correction	Off, On	
Antialiasing - transparency	Off, Multisampling, supersampling	
Background Application Max Frame Rate	Range: 20-200	
Buffer-flipping mode	Auto-select, Block transfer	NVIDIA Quadro cards
CUDA - GPUs	[All CUDA-capable GPUs]	
Deep color for 3D applications	Allow, disable	
DSR Factors	OFF Available factors depend on system capability. Examples: 1.20x (native resolution) 1.50x (native resolution) 2.00x (native resolution) etc.	
DSR Smoothness	OFF 0 - 100%	
Dynamic Boost	On, Off	
Enable overlay	**Off** On	
Exported pixel types	8-bpp and/or RGB555 format, None	NVIDIA Quadro cards
Image Sharpening	**Sharpening Off**, Sharpening On: - Sharpen slider: 0-1.0 - Ignore Film Grain slider: 0-1.0 GPU Upscaling check box	
Low Latency Mode	Off, On, Ultra	
Max Frame Rate	**Off**, On (slider range 20-1000 fps)	
Monitor Technology	G-SYNC/G-SYNC Compatible, ULMB, Fixed Refresh	
Multi-display/mixed-GPU acceleration	Single, Compatible, or Multiple display performance modes	

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Multi-GPU performance mode	single-GPU, alternate frame rendering 1 & 2, split frame rendering, or multi-GPU antialiasing	
OpenGL Rendering GPU	Auto-select,	NVIDIA NVS cards
Optimize for Compute Performance	Off, On	Windows 10, Maxwell GPUs and later. Offers significant improvement for some Compute applications. Care should be taken when turning this setting ON, as there can be unpredictable effects with some applications and graphics features.
Power management mode	Adaptive, NVIDIA driver controlled, Prefer maximum performance, Prefer consistent performance, Optimal power	"NVIDIA Driver controlled" GPUs
Preferred Refresh Rate	Application-controlled, Highest available	
SLI performance modes	single-GPU, alternate frame rendering 1 & 2, split frame rendering, or SLI antialiasing	
Stereo - Display mode	Select to match stereo viewing hardware	NVIDIA Quadro cards
Stereo - Enable	Off, On	NVIDIA Quadro cards
Stereo - Force shuttering	Off, On	NVIDIA Quadro cards
Stereo - Swap eyes	Off, On	NVIDIA Quadro cards
Stereo - Swap mode	Application Controlled, Per Eye, Per Eye-pair	NVIDIA Quadro cards
Texture filtering - anisotropic mip filter optimization	Off, On	
Texture filtering - anisotropic sample filter optimization	Off, On	
Texture filtering - Negative LOD bias	Allow, Clamp	

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Texture filtering - Quality	High quality, Quality, Performance, High performance	Balance between quality and performance.
Texture filtering - Trilinear optimization	Off, On	
Threaded optimization	Off, On	For systems with multiple CPUs
Triple buffering	Off, On	
Vertical sync	Use the 3D application setting, Off, On, Adaptive, Adaptive (half refresh rate), Fast	Adaptive settings are available only on Windows Vista and later, and only if Monitor Technology is set to ULMB or Fixed Refresh Rate.
Virtual Reality pre-rendered frames	Use the 3D application setting, 1, 2, 3, 4	Sets the frame pre-rendering
Whisper Mode	Off: Disabled by GeForce Experience On: Enabled by GeForce Experience and applied as a Global Setting. Frame rates are capped at 40 or 60 fps, depending on the application. WhisperMode slider: Appears under Program Settings when enabled in GeForce Experience.	Available on Pascal and later GPUs, on single-GPU configurations.
3D Application Controls - Special Features		
PhysX Configuration		For systems with PhysX-capable GPUs, a minimum of 256MB dedicated graphics memory, and a minimum of 32 processor cores
SLI/Multi-GPU Configuration		For systems with SLI or multi-GPU ready GPUs.

Table 3.1 NVIDIA Control Panel Features

Feature	Values (Default in bold)[a]	Notes
Manage Power and Display Settings - Power Mode	Power Balanced Quiet	For certain enterprise-class notebooks based on the NVIDIA Turing GPU architecture, such as the NVIDIA Quadro RTX 6000 notebook.
Manage Power and Display Settings - Display Multiplexer	Internal display multiplexer type External display multiplexer type	

a. Defaults for the 3D application controls are for the Global Settings tab. Under the Program Settings tab, **Use global setting** is typically the default setting.

NVIDIA Control Panel Groups

This section provides an overview of the NVIDIA Control Panel groups.

- "Using the Display Pages" on page 23
- "Using the Video Pages" on page 23
- "Using the 3D Settings Pages" on page 23
- "Using the Licensing Pages" on page 24
- "Using the Workstation Pages" on page 24

Using the Display Pages

The actual tasks available on your system depend on your system hardware, such as the number and type of displays connected. Use the Display group pages to:

- Run the wizard to optimize your display configuration.
- Change the display resolution.
- Change the scaling on your flat panel display.
- Adjust desktop color settings.
- Rotate the display.
- Adjust custom timings.
- Configure multiple displays, including Clone modes.
- Adjust your television picture quality and video color settings for the best possible viewing in its environment.
- Change the position and size of the desktop/video to best fit your television or HDTV (high definition television) screen.
- Change the signal format to use for your standard television or HDTV as well as change country-specific signal or the HDTV format.
- Verify the HDCP capability of your system.
- Access digital audio controls.

Using the Video Pages

The actual tasks available on your system depend on your system hardware, such as whether or not you have a TV connected and enabled. Use the Video page to:

- Adjust video and image color settings.

Using the 3D Settings Pages

The actual tasks available on your system depend on your system hardware, such as whether or not you have an SLI-ready system. Use the 3D Settings page to:

- Change the image and rendering settings of your 3D applications and games that utilize Direct3D and OpenGL technology.
- Assign specific 3D settings to a game so that these settings automatically load when a game is launched (available under Advanced view).
- Set up your SLI or multi-GPU configuration as well as PhysX configuration.

GPU temperature monitoring and GPU overclocking features are not included in the 3D Settings page. To use this functionality you must install NVIDIA nTune software.

Using the Licensing Pages

Use the Licensing pages to obtain licenses for NVIDIA GRID vGPU or NVIDIA Quadro Virtual Datacenter Workstation (Quadro vDWS) on supported Tesla products.

The Licensing pages are available if the vGPU requires a license, or if the GPU or driver supports GRID licensed features.

Using the Developer Pages

Use the Developer pages to control settings specific to developers who need to user NVIDIA developer tools.

Using the Workstation Pages

The Workstation group is available if you have an NVIDIA Quadro graphics card installed.

The actual tasks available depend on which NVIDIA Quadro product you have installed. Use the Workstation page to:

- Synchronize your displays using frame sync or genlock technology.
- View a graphical representation of the displays and graphics cards installed on your system.
- Configure Mosaic mode to combine multiple displays into a larger virtual canvass.
- Configure ECC control on supported GPUs.
- Overlap the edges of adjacent displays.

  Display edge blending is no longer available.

Appendix A Professional 3D Stereo

This appendix discusses professional or quad-buffered 3D stereo. It contains the following sections:

- "About Workstation 3D Stereo" on page 25
- "Using Workstation 3D Stereo" on page 26

About Workstation 3D Stereo

The NVIDIA graphics driver comes with built-in support for 3D stereoscopic viewing of OpenGL applications developed for 3D stereo. This is also referred to as "professional", "workstation", or "quad-buffered" stereo.

Basic Workstation 3D Stereo Requirements

To use workstation stereo, you need the following:

- OpenGL application that is developed for stereo

  The application must be designed to render different content to the left and right eye.
- NVIDIA Quadro graphics card, except NVIDIA Quadro NVS cards
- Proper driver configuration through the NVIDIA Control Panel

Using 3D Stereo under Different System Configurations

The NVIDIA drivers support both full-screen and windowed stereo. Table A.1 details which stereo modes are supported under which GPU/display configurations.

Table A.1 Workstation Stereo Configurations

System Configuration	Active Stereo Display Modes	Passive Stereo Display Modes
Single GPU - Single display	Supported	Supported
Single GPU - Multiple displays	Not supported	Supported (including CloneMode)
Multi-system - Multiple displays	Not supported	Not supported
Multi-GPU Mode	Not supported	Supported (including CloneMode)
SLI mode	Not supported	Not supported

Using Workstation 3D Stereo

Basic 3D Stereo Setup

1 Set up the 3D stereo viewing hardware according to the instructions that came with your hardware.
2. Start the system, then right-click the desktop and click NVIDIA Control Panel to open the panel.
3. From the *Select a Task* pane, click Manage 3D Settings, then click the Global Settings tab.
4. Under the Settings: Feature column, click Stereo - Enable, then click the corresponding Setting list arrow and select On.
5. Click Apply.

Selecting the Stereo Display Mode

Typically, the driver detects the type of stereo hardware that is installed and automatically selects the appropriate display mode. If you cannot view 3D stereo with your application after these steps, then manually select the display mode as follows:

1 Re-open the *Global Settings* tab in the NVIDIA Control Panel Manage 3D Settings page

2. Under the Settings: Feature column, click Stereo - Display mode, then click the corresponding Setting list arrow and select the stereo display mode that is appropriate for your stereo viewing hardware.
   - See Table A.2, "List of Supported Stereo Display Modes" on page 27 for a description of the available modes.
   - If you want to use passive stereo using nView Clone mode, be sure to set up Clone mode using the *Set Up Display Configuration* page.
3. Click Apply.

Table A.2 List of Supported Stereo Display Modes

Option	Description	Hardware Examples
On-board DIN connector	Time sequential, page-flip stereo, with stereo shutter glasses connected directly to a 3-pin DIN VESA connector.	
On-board DIN connector (with NVIDIA IR Emitter)	Time sequential, page-flip stereo, with NVIDIA IR emitter connected to the 3-pin DIN VESA connector via dongle.	NVIDIA GeForce 3D Vision
Generic active stereo	Any time sequential, page-flip stereo	Displays which accept time-sequential stereo signals
Generic active stereo (with NVIDIA IR Emitter)	Any time sequential, page-flip stereo using the NVIDIA IR emitter	NVIDIA GeForce 3D Vision
nView Clone Mode	Uses projectors from two displays in nView Clone mode–left image on one display, right image on the other. Passive polarized filters (glasses) isolate the left and right images to the corresponding eyes of the viewer.	Dep3D System

Table A.2 List of Supported Stereo Display Modes (continued)

Option	Description	Hardware Examples
nView Clone Mode (with NVIDIA IR Emitter using external stereo signal)	Clone mode passive to active stereo conversion - the left/right images are displayed through separate monitor outputs and converted to active stereo by the display. The display feeds the stereo toggle signal into the NVIDIA IR emitter using a 3-pin DIN stereo cable.	projectiondesign F10
Vertical interlaced stereo monitor	Vertical pixel columns alternate between left and right images. A beam splitter directs the left and right images to the corresponding eyes of the viewer.	SeeReal Technologies
Color interleaved display	Custom implementation for the Sharp 3D Display, an auto-stereoscopic display that uses a parallax barrier technology to provide 3D stereo on the LCD.	Sharp3D Stereo Digital Flat Panels
Horizontal interlaced stereo display	Horizontal scan lines alternate between left and right images. Passive polarized filters (glasses) isolate the left and right images to the corresponding eyes of the viewer.	VRex, Inc.
3D DLP display	Projector or rear projection TV using Texas Instrument's Digital Light Processing (DLP) technology. Requires shutter glasses.	Samsung or Mitsubishi DLP HDTV with shutter glasses
3D DLP display (with NVIDIA IR Emitter)	Projector or rear projection TV using Texas Instrument's Digital Light Processing (DLP) technology. Requires NVIDIA GeForce 3D Vision IR emitter.	Samsung or Mitsubishi DLP HDTV with NVIDIA GeForce 3D Vision
3D DLP display INV mode	Use if the "3D DLP display" option results in reversed eyes.	Samsung or Mitsubishi DLP HDTV with shutter glasses
3D DLP display INV mode (with NVIDIA IR Emitter)	Use if the "3D DLP display (with NVIDIA IR Emiter) " option results in reversed eyes.	Samsung or Mitsubishi DLP HDTV with NVIDIA GeForce 3D Vision

Using Workstation 3D Stereo with Multiple Displays

In a multi-display system, you can move the OpenGL application window to all monitors, although stereo might not be visible on all monitors.

Enabling 3D Stereo with Multiple Displays

To make sure that you successfully enable 3D stereo in a multi-display configuration and avoid losing stereo settings, NVIDIA recommends first enabling stereo in single-display mode and then closing the NVIDIA Control Panel before setting up multi-display modes.

1 Enable 3D stereo

   a Open the NVIDIA Control Panel, then set single-display mode using the Set Up Multiple Displays page.

   b. Set stereo settings using the Manage 3D Settings page.

   c. Close the NVIDIA Control Panel.

2. Enable multiple displays

   Using either the Windows Display Properties page or by re-opening the NVIDIA Control panel->Set up Multiple Displays page, set the desired multi-display mode.

3. Set up other NVIDIA Control Panel->Workstation settings as needed, such as frame locking.

3D Stereo Under nView Modes

Under nView multi-display modes, both displays must be set to the same resolution and refresh rate. If the refresh rates are different, the 3D stereo will be displayed on the display with the highest refresh rate.

3D Stereo Under Dualview Modes

Under Dualview mode, all displays must be set to the same refresh rate for 3D stereo to be displayed on all the Dualview displays. If the refresh rates are different, 3D stereo will be displayed on the display with the highest refresh rate.

Appendix B NVIDIA Application Configuration Engine

This appendix discusses the NVIDIA application configuration engine (ACE) for professional workstation applications. It contains the following sections:

- "Introduction" on page 31
- "Using ACE with Supported Applications" on page 31
- "Using Applications that are not Supported by ACE" on page 33
- "Adding to the List of ACE-detectable Applications" on page 35
- "Frequently Asked Questions" on page 36

Introduction

Background

Workstation application profiles are a group of software settings used by the NVIDIA graphics driver to provide optimum performance when using a selected application. If there is an available profile for an application, it should be used in order to ensure correct application behavior and optimal performance.

About NVIDIA ACE

With the NVIDIA application configuration engine (ACE), the graphics driver can now detect supported workstation applications and apply the appropriate profile settings automatically–you no longer need to manually select the profile from the NVIDIA Control Panel. If you run more than one application at a time, ACE makes sure that the driver applies the appropriate profile settings to each application.

Using ACE with Supported Applications

When you run an application that is supported by ACE, you do not need to do anything special. The driver will detect the application and apply the appropriate profile settings automatically.

How to Determine ACE Support

To determine whether your application is supported by ACE:

1 Open the NVIDIA Control Panel.

2. From the Select a Task pane, under 3D Settings, click Manage 3D Settings, then click the Program Settings tab.

The Select a program to customize list box contains a list of the ACE-detectable applications.

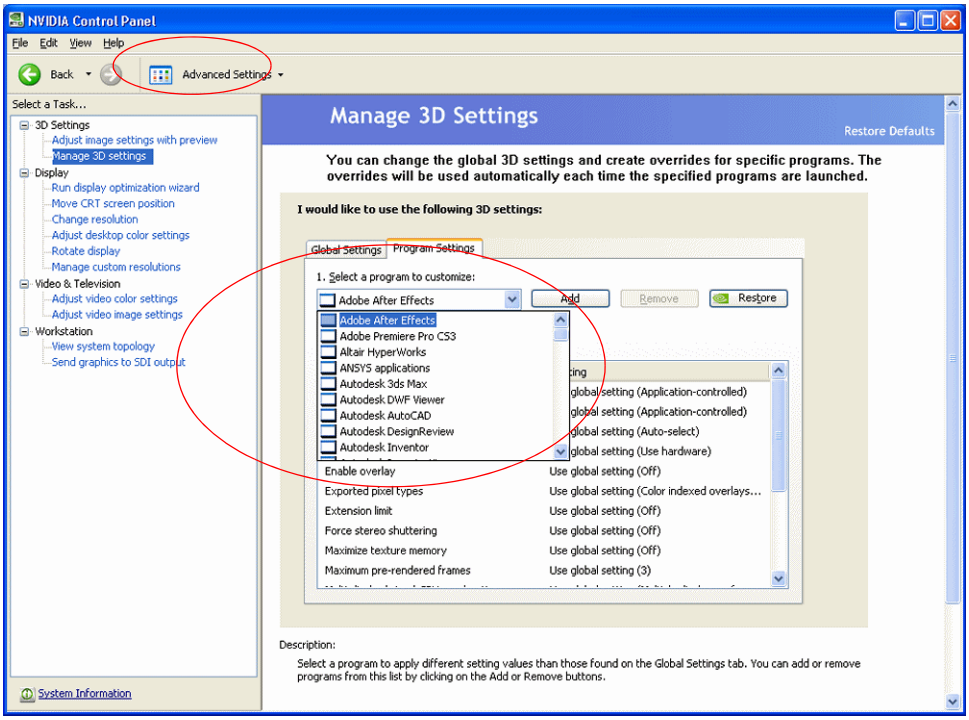


Figure B.1 Manage 3D Settings Page–ACE-detectable applications

Modifying Settings for ACE-detectable Applications

You can modify the settings as follows:

1 Select the application from the Select a program to customize box.

The settings for the application are listed in the Specify the settings for this program box.

2. Click the setting you want to change and then select the new setting from the drop-down list.
3. Click Apply when you are finished making your changes.

Using Applications that are not Supported by ACE

If your application is not detectable by ACE, then you should configure an application profile and make sure it is set before running the application.

Setting Up an Application Profile Using Global Presets

1 From the Manage 3D Settings page, click the Global Settings tab.

2. Click the Global Presets list arrow.

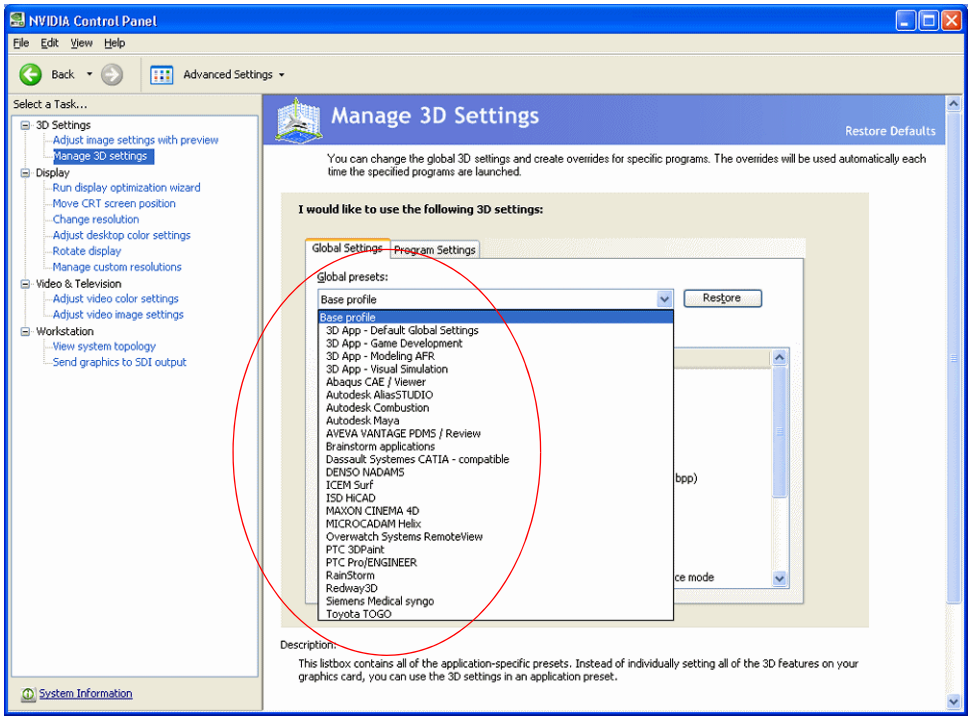


Figure B.2 Manage 3D Settings Page–Applications with Global Profiles

3. Select one of the global presets:

   Select a Base profile or one of the generic 3D App profiles, or create a new profile (see "Adding to the List of ACE-detectable Applications" on page 35).

4. In the Settings box, you can modify the profile by clicking the setting you want to change and then selecting the new setting from the drop-down list.

5. Click Apply when you are finished making your changes.

If you run a different application that is not ACE-detectable and do not want to use these settings, then repeat these steps for the new application.

Be aware that these settings may affect any ACE profile settings that specify "Use global setting".

About the Global Presets

Global profiles, or presets, are a set of 3D settings that the driver applies to any workstation application. While a specific profile contains settings that work best with a particular application, the settings are applied to any workstation application you run, as long as there are no ACE-detected program settings to override them.

The following are descriptions of the available global presets:

- Base profile

  This preset lets you configure all the settings, and provides the most flexibility. Other presets allow you to configure only a limited selection of settings.

- 3D App - Default Global Settings

  This preset uses SLI single-GPU rendering mode, and is also useful when you need to use non-SLI configurations.

- 3D App - Game Development

  This preset is useful for game development when using an NVIDIA Quadro card. This eliminates the need for game developers to switch to a GeForce graphics card as the settings cause the Quadro card to run like a GeForce card.

- 3D App - Modeling AFR

  This preset is useful for modeling applications, and uses SLI AFR mode.

- 3D App - Visual Simulation

  This preset is useful for visual simulation applications, and uses SLI SFR mode.

Adding to the List of ACE-detectable Applications

If your application is not listed in any of the profile lists in the Global Settings or Program Settings tab, then you can create a profile for that application as follows:

Note: If your application is listed in the Global Settings tab (Windows XP only), then **do not create a new profile.** Set the global preset for that application instead.

1 From the Manage 3D Settings page, click the Program Settings tab.
2. Click Add.
3. In the Open dialog box, navigate to the location of your application executable, then click the executable file name and click Open.
4. The file name appears in the Select a program to customize list box.
5. In the Specify the settings for this program box, configure any settings by clicking the setting you want to change and then selecting the new setting from the drop-down list.
6. Click Apply when you are finished making your changes.

The new profile will be applied automatically whenever the application is run, just like one of the default ACE profiles.

If your application was running while you created the new profile, you must restart the application in order for the settings to be applied.

Frequently Asked Questions

- What happens when I run more than one ACE-detectable application at the same time?

  The driver detects each application and applies the appropriate profile to each one automatically.

- What happens when I run an ACE-detectable application and a non-ACE-detectable application at the same time?

  The driver applies the global preset to the non-ACE-detected application, and applies the appropriate profile to the ACE-detected application. Note that any settings in the ACE profile that specify "Use global setting" will be controlled by the global preset.

- Can I create my own application profile?

  Only one profile can be created for a specific executable, so if your application is ACE-detectable, do not create another profile for that application.

  If your application is not ACE-detectable, and there is no global preset for it, then you can create a new profile as described in "Adding to the List of ACE-detectable Applications" on page 35.

- Can I create a new global profile for a specific application?

  For applications that are not detected by ACE, you can select an existing global preset and customize it, but you will not be able to save it under a custom name.

- Which global preset should I use?

  Unless you know that a specific global preset is appropriate for your application (see "About the Global Presets" on page 34), it is best to use the Base profile.

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