



# NVIDIA Quadro Professional Drivers ***Release 162 Notes***

**Version 162.65**

**For Windows Vista 32-bit  
and Windows Vista 64-bit**

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**NVIDIA Corporation  
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## CHAPTER

## 1

# INTRODUCTION TO *RELEASE 162 NOTES*

This edition of *Release 162 Notes* describes the Release 162 ForceWare Graphics Drivers and provides information applicable to all NVIDIA drivers. NVIDIA provides these notes to describe performance improvements and bug fixes in each documented version of the driver.

## Structure of the Document

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This document is organized in the following sections:

- “[Release 162 Driver Changes](#)” on [page 3](#) gives a summary of changes, and fixed and open issues in this version.
- “[The Release 162 Driver](#)” on [page 21](#) describes the NVIDIA products and languages supported by this driver, the system requirements, and how to install the driver.
- “[Mode Support for Windows](#)” on [page 27](#) lists the default resolutions supported by the driver.

## Changes in this Edition

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This edition of the *Release 162 Notes* for Windows Vista includes information about NVIDIA ForceWare graphics driver version 162.65, and lists changes made to the driver since versions 160.02. These changes are discussed beginning with the chapter “[Release 162 Driver Changes](#)” on [page 3](#).



## CHAPTER

## 2

## RELEASE 162 DRIVER CHANGES

This chapter describes open issues for version 162.65, and resolved issues and driver enhancements for versions of the Release 162 driver up to version 162.65. The chapter contains these sections:

- “Version 162.65 Highlights” on page 4
- “Changes in Version 162.65” on page 8
- “Changes in Version 162.62” on page 9
- “Changes in Version 162.50” on page 11
- “Open Issues in Version 162.65” on page 12
- “Not NVIDIA Issues” on page 13
- “Known Product Limitations” on page 18

## Version 162.65 Highlights

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This section provides highlights of version 162.65 of the NVIDIA Release 162 Driver for Windows Vista.

- [What's New in Version 162.65](#)
- [Limitations in This Release](#)
- [Special Instructional Notes for this Release](#)

### What's New in Release 162

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#### New Features

- Increased Total Graphics Memory under Windows Vista for NVIDIA Quadro FX 4600 and Quadro FX 5600 and later GPUs.
- Improved DirectX 10 SLI support
- Added "Resize the HDTV desktop" underscan compensation page to the NVIDIA Control Panel
- Added driver support for the following NVIDIA Quadro products:
  - Quadro FX 370
  - Quadro FX 570
  - Quadro FX 1700
  - Quadro NVS 290

### What's New in Version 162.65

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#### Resolved Issues for Windows Vista

See "Changes in Version 162.65" on page 8 for a list of resolved issues under Windows Vista.

## Limitations in This Release

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The following are features that are not currently supported or have limited support in this driver release:

- **NVIDIA Quad SLI Technology**

This driver does not support NVIDIA Quad SLI mode.

- **NVIDIA SLI Antialiasing**

This driver does not support NVIDIA SLI antialiasing.

- **Refresh Rate Precision**

The current driver programs the hardware timing for a 59.94 Hz refresh rate to be the same as the timing used for a 60 Hz refresh rate.

- **Pan & Scan**

This driver does not support the Pan & Scan feature. (Pan & Scan is the process of panning across the desktop in order to display a desktop on a monitor with lower resolution).

- **INF Support for Restricted Timings**

This driver version does not support the use of Restricted Timing settings (R&T strings) in the INF to control mode validation and/or mode setting for custom mode/adaptor/monitor combinations. This capability is planned for a later driver release.

- **Advanced Timings, Custom Resolutions**

This driver does not support adding arbitrary resolutions and timings.

- **Mode Filtering for Custom Policies**

This driver does not support defining advanced timings and resolution settings.

- **SDI**

This driver does not support the Serial Display Interface (a standard for driving high color depth displays).

- **Genlock/Frame Lock**

This driver does not support the ability to synchronize multiple display outputs with an external signal.

- **NVIDIA TurboCache**

Windows Vista now controls the allocation of system memory to the GPU for TurboCache functions. The Windows Vista Display Properties pages show

the shared system memory (SSM), or how much memory is allocated for NVIDIA GPUs to use for TurboCache.

For more information on graphics memory reporting under Windows Vista, visit <http://www.microsoft.com/whdc/device/display/graphicsmemory.mspx>.

- **NVIDIA nView Desktop Manager**

The nView Desktop Manager is not included in this driver. The following nView Desktop Manager features will be included in a future driver version:

- Gridlines
- Virtual Desktops
- Window/Dialog Repositioning
- nView Profiles

## **Features Not Yet Available in the NVIDIA Control Panel**

Support for the following control panel features is under development and not yet available under Windows Vista:

- **Display Category**
  - Run display optimization wizard
  - Move CRT screen position
  - Manage custom timings
  - Run multiple display wizard
- **Video & Television Category**
  - Run television setup wizard
  - Adjust television color settings
  - Adjust screen size and position
- **Workstation Category**

The Workstation category page is not available with this driver version.

## Special Instructional Notes for this Release

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This section clarifies instructions for successfully accomplishing the following tasks:

### Turning Off V-Sync to Boost Performance

To get the best benchmark and application performance measurements, turn V-Sync off as follows:

- 1 Open the NVIDIA Control Panel and enable Advanced View.
- 2 In the 3D Settings Category, click Manage 3D Settings.
- 3 From the Global presets pulldown menu, select **Custom** and then click **Apply**.
- 4 From the Settings listbox, select **Vertical sync** and change its value to **Force off**, then click **Apply**.
- 5 From the Global presets pulldown menu, select **3D App - Default Global Settings** (the driver's default profile) or use the application profile that matches the application you are testing, then click **Apply**.

*Be sure to close the NVIDIA Control Panel completely* —leaving it open will affect benchmark and application performance.

## Changes in Version 162.65

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The following sections list the changes made and issues resolved since driver version 162.62.

- “Fixed Issues–Windows Vista 32-bit” on page 8
- “Fixed Issues–Windows Vista 64-bit” on page 8

The NVIDIA bug number and driver module are provided for reference.

### Fixed Issues–Windows Vista 32-bit

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- NVIDIA Quadro cards: 3D Studio Max–In Direct3D mode, when maximized, the viewports become black upon attempting to display objects with high polygon count (>200).
- NVIDIA Control Panel: The Rotation function is missing.
- Workstation: Maya 8.5–there is corruption in the Viewports after resuming from standby.
- Added workstation application profiles for UGS.

### Fixed Issues–Windows Vista 64-bit

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- Workstation: Maya 8.5–there is corruption in the Viewports after resuming from standby.
- Added workstation application profiles for UGS.

## Changes in Version 162.62

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The following sections list the changes made and issues resolved since driver version 162.50.

- “Fixed Issues–Windows Vista 32-bit” on page 9
- “Fixed Issues–Windows Vista 64-bit” on page 9

The NVIDIA bug number and driver module are provided for reference.

### Fixed Issues–Windows Vista 32-bit

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- Application profiles are missing for specific I-DEAS executable files.
- GLView - the second monitor is blank when running the rendering test.
- Microsoft SDK ShadowVolume - the screen flashes when using an odd number of lights.
- Localization, NVIDIA Control Panel: The 3D Settings->Manage 3D Settings->Global Settings tab: "Exported pixel types" text is not localized.
- The NVIDIA Control Panel Rotation function is not available.
- NVIDIA Quadro FX 1700: Far Cry - blue-screen crash occurs when running the benchmark.
- NVIDIA Quadro FX 3450: The dialog box which opens after attempting to rotate the secondary monitor in Dualview mode doesn't close using "X" button.

### Fixed Issues–Windows Vista 64-bit

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- CATIA V5– the application hangs when using the new Vertex Array options.
- Microsoft DirectX 9 SDK FragmentLinker - the demo crashes when switched to full-screen mode.
- The NVIDIA Control Panel Color Correction function is not available.
- NVIDIA Quadro cards: Unigraphics Certification test - application error occurs when looping the test.

- NVIDIA Quadro cards: Maya 8.0 does not draw during the certification test.
- NVIDIA Quadro FX 1700: Blue-screen crash occurs when running Redbook OpenGL demos.
- NVIDIA Quadro FX 4600: Microsoft DirectX 10 SDK FragmentLinker shuts down after dragging an object in full-screen mode.

## Changes in Version 162.50

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The following sections list the changes made and issues resolved since driver version 160.02.

- “Fixed Issues–Windows Vista 32-bit” on page 11
- “Fixed Issues–Windows Vista 64-bit” on page 11

The NVIDIA bug number and driver module are provided for reference.

### Fixed Issues–Windows Vista 32-bit

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- On resume from sleep state, the monitor screen is black (no video) but computer is still on.
- SolidWorks 2007 APC test performance under Windows Vista is 72% of the performance under Windows XP.
- Maya crashes when running specific performance tests in Dualview mode.

### Fixed Issues–Windows Vista 64-bit

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- NVIDIA Quadro FX 1400: Dassault fails to launch after uninstalling the NVIDIA driver.
- NVIDIA Quadro FX 3400: Ansys Workbench V11 crashes when going from the Start page directly to the Geometry module.
- Workstation: Solid Edge v20– 64-bit Solid Edge aborts when you open an existing file.

## Open Issues in Version 162.65

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As with every released driver, version 162.65 of the Release 162 driver has open issues and enhancement requests associated with it. This section includes lists of issues that are either not fixed or not implemented in this version. Some problems listed may not have been thoroughly investigated and, in fact, may not be NVIDIA issues. Others may have workaround solutions.

- [“Windows Vista x86 Issues”](#) on page 12
- [“Windows Vista x64 Issues”](#) on page 12

### Windows Vista x86 Issues

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- Dual Quadro FX 4500: `wglEnumGpusNV()` enumerates only one GPU.

### Windows Vista x64 Issues

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- Dual Quadro FX 4500: `wglEnumGpusNV()` enumerates only one GPU.

## Not NVIDIA Issues

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This section lists issues that are not due to the NVIDIA driver as well as features that are not meant to be supported by the NVIDIA driver for Windows Vista.

- “Windows Vista Limitations” on page 13
- “Unsupported Features” on page 13
- “OpenGL Application Issues” on page 15
- “Application Issues” on page 16

### Windows Vista Limitations

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These are behaviors that may be different from Windows XP and are related directly to the Windows Vista operating system.

- World of Warcraft – there is a 60% drop in performance when running the game in windowed mode with SLI or multi-GPU mode enabled.

*This is due to a limitation of the Windows Vista operating system and affects all multi-GPU systems. NVIDIA is investigating a workaround for this performance problem.*

### Unsupported Features

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The following are features and functionality that were available in driver releases supporting Windows XP, but are not available in driver releases for Windows Vista:

- **High resolution scaling desktop (HRSD)**
- **MultiView Display Mode** (for NVIDIA Quadro NVS graphics cards)
- **NVKeystone**
- **Unified back buffer (UBB) controls**
- **Video Overlays**

This is an operating system limitation.

Vista window manager features will provide new ways of accomplishing overlays, but will require application porting.

- **Overclocking**

GPU overclocking is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA nTune 5.05 software, which you can download from [NVIDIA.com](http://NVIDIA.com).

- **GPU Temperature Monitoring**

Temperature monitoring is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA nTune 5.05 software, which you can download from [NVIDIA.com](http://NVIDIA.com).

### **AGP Settings Adjustment**

- **Full-screen Video Mirror**
- **Video Zoom**
- **Per-display Video Color Setting Adjustment**

Video color setting adjustments through the NVIDIA Control Panel can only be made across all displays in a system, and not on a per-display basis.

- **nView Horizontal and Vertical Span Modes**

Due to architectural changes in the new Windows Vista Window Display Driver Model (WDDM), span mode cannot be supported in NVIDIA graphics drivers. NVIDIA recommends using the built-in Windows Vista multi-display modes.

- **Edge Blending**
- **Display/Connection Wizard** (such as was provided with Windows Media Center Edition)
- **DVD/MPEG Extensions** (such as was provided with Windows Media Center Edition)
- **Audio Extensions** (such as was provided with Windows Media Center Edition)
- **Windowed quad-buffered stereo**

This is an operating system limitation.

## OpenGL Application Issues

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The following are known compatibility issues for OpenGL applications developed under Windows XP:

- Mixed GDI and OpenGL rendering does not work.

A number of applications use GDI to render UI components and object highlighting. This is not supported in the Windows Vista driver model.

NVIDIA recommends converting GDI rendering to OpenGL.

The following are some applications that are known to have this issue:

- Maya 7.01
- OneSpace Designer Modeling
- Applications, Tools, and Benchmarks not supported under Windows Vista
  - GLperf
  - 3ds max 8 (later releases may be supported)
  - CATIA V5R15 (V5R16 is supported)
  - PTC's CDRS 2001
- Front buffered rendering may be slow, especially when DWM is enabled.

Flushing the rendering queue while rendering to the front buffer may cause the window manager to recomposite. Applications should therefore minimize the frequency with which they flush the rendering queue.

## Application Issues

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- **General Antialiasing Problem with Top Games**

We have found that some games running under Windows Vista enable 16x coverage sampling antialiasing (CSAA) when 4xAA is selected in the game menu, resulting in deflated performance on the latest NVIDIA Quadro FX cards.

The problem occurs with NVIDIA Vista drivers 100.54 and later.

The same effect will occur in future "Release 100" Windows XP drivers.

Affected applications found to date include:

- Battlefield 2
- Battlefield 2142
- Sin Episodes
- Half-Life 2
- Half-Life 2 Lost Coast

To set standard 4xAA in these applications, please set 4xAA in the game, and also enable "Enhance the application" antialiasing mode with a 4x antialiasing setting in the NVIDIA graphics driver control panel.

We are working with developers to implement better in-game CSAA support. You can see CSAA menu selections in Half-Life 2: Episode One and Supreme Commander.

- **City of Heroes—The mouse cursor does not display.**

*This is an application issue that can be worked around in full-screen mode by adding "compatibleursors 1" to the City of Heroes desktop shortcut.*

*NVIDIA is pursuing a fix with the application developer.*

- **Sims 2—"Smooth Edges (AA)" option is not available with Release 100 drivers.**

*This occurs because of an incorrect driver version check in the application. Using a previous Release 95 driver (xx.xx format) will allow the option to be visible.*

*NVIDIA is pursuing a fix with the application developer.*

- **Warhammer 40k Dawn of War (all versions) does not run with Release 100 drivers.**

*This occurs because of an incorrect driver version check in the application. Using a previous Release 95 driver (xx.xx format) will allow the option to be visible.*

*NVIDIA is pursuing a fix with the application developer.*

- **Tiger Woods PGA Tour 2007—Fly-by shot before each hole blacks-out textures.**

*NVIDIA is working with the developer to resolve this issue.*

- Need for Speed Carbon—After upgrading with patch 1.3, the game crashes when launched.

*This is an issue with the application patch under Windows Vista.*

- Nascar Simracing—the game crashes when launched.

*This is an issue with the application under Windows Vista.*

- Call of Duty 2—Only solid colors render during gameplay when 4xAA is enabled.

*The application is not applying antialiasing properly. Please try selecting 2x AA, disabling antialiasing, or using NVIDIA Enhanced application or Override antialiasing modes.*

*NVIDIA is pursuing a fix with the application developer*

- Age of Empires III—the game has rendering artifacts, such as textured squares for smoke.
- Flight Simulator X—pressing Alt+Tab to switch to the desktop does not work.
- Everquest 2— with NVIDIA driver versions 100.xx, the following error message appears:

*"You currently have a (7.15.11.120) video card installed. We recommend that you download version 7772 drivers before playing Everquest."*

*This occurs because the application is not checking the driver version correctly, but this does not affect gameplay. Please select "Continue Anyway" to launch the game. The problem does not occur with a previous Release 95 driver (xx.xx format).*

*NVIDIA is pursuing a fix with the application developer.*

- MediaComposer video playback does not update properly.

*This is not an NVIDIA Bug, but rather an issue with the application.*

## Known Product Limitations

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This section describes problems that will not be fixed. Usually, the source of the problem is beyond the control of NVIDIA. Following is the list of problems and where they are discussed in this document:

- “SLI Connector Requirement on NVIDIA Quadro SLI Cards” on page 18
- “Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards” on page 18
- “Applying Workstation Application Profiles” on page 19
- “Gigabyte GA-6BX Motherboard” on page 19

### SLI Connector Requirement on NVIDIA Quadro SLI Cards

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The SLI connector that links two SLI cards is needed for proper SLI operation. However, the connector can be removed if you do not intend to enable SLI mode. If you remove the connector, then you must make sure that SLI mode is disabled from the NVIDIA control panel. Enabling SLI mode without the SLI connector installed will result in video corruption.

### Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards

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- **Problem**

When a 64 MB NVIDIA Quadro FX 330 card is installed, the driver reports that the card needs 256 MB, causing 256 MB of address space to be consumed.

- **Explanation**

*This is not a bug but a product limitation.*

The NVIDIA Quadro FX 330 GPU has some limitations that prevent the card from addressing less than 256 MB of system memory.

## Applying Workstation Application Profiles

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- **Background**

The workstation application profiles are software settings used by the NVIDIA Display Drivers to provide optimum performance when using a selected application. The profile also works around known application issues and bugs.

If there is an available setting for an application, it should be used, otherwise incorrect behavior or reduced performance is likely to occur.

- **Issues**

Configuration changes require the application to restart.

Running applications do not receive notification of configuration changes. Therefore, if you change the configuration while the application is running, you must exit and restart the application for the configuration changes to take effect.

## Gigabyte GA-6BX Motherboard

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This motherboard uses a LinFINITY regulator on the 3.3-V rail that is rated to only 5 A—less than the AGP specification, which requires 6 A. When diagnostics or applications are running, the temperature of the regulator rises, causing the voltage to the NVIDIA chip to drop as low as 2.2 V. Under these circumstances, the regulator cannot supply the current on the 3.3-V rail that the NVIDIA chip requires.

This problem does not occur when the graphics board has a switching regulator or when an external power supply is connected to the 3.3-V rail.



## CHAPTER

## 3

# THE RELEASE 162 DRIVER

This chapter covers the following main topics:

- “Hardware and Software Support” on page 21
- “Driver Installation” on page 24
- “NVIDIA Driver History” on page 25

## Hardware and Software Support

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### Supported Operating Systems

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The Release 162 driver, version 162.65, has been tested with Microsoft Windows® Vista RTM OS builds version 6000 or higher, and supports both 32-bit and 64-bit versions of Windows Vista Editions:

- Windows Vista Home Basic
- Windows Vista Home Premium
- Windows Vista Business
- Windows Vista Enterprise Edition
- Windows Vista Ultimate

## Supported NVIDIA Products

Table 3.1 lists the NVIDIA products supported by the Release 162 driver.

**Table 3.1** Supported NVIDIA Workstation Products

<b>Product</b>	<b>Windows XP 32-bit Windows 2000</b>	<b>Windows XP Professional x64</b>
NVIDIA Quadro FX 5600	X	X
NVIDIA Quadro FX 5500 SDI	X	X
NVIDIA Quadro FX 5500	X	X
NVIDIA Quadro FX 4600	X	X
NVIDIA Quadro FX 4500 X2	X	X
NVIDIA Quadro FX 4500	X	X
NVIDIA Quadro FX 4500 SDI	X	X
NVIDIA Quadro FX 4400	X	X
NVIDIA Quadro FX 4400G	X	X
NVIDIA Quadro FX 4000	X	X
NVIDIA Quadro FX 4000 SDI	X	X
NVIDIA Quadro FX 3500	X	X
NVIDIA Quadro FX 3450	X	X
NVIDIA Quadro FX 3400	X	X
NVIDIA Quadro FX 1700	X	X
NVIDIA Quadro FX 1500	X	X
NVIDIA Quadro FX 1400	X	X
NVIDIA Quadro FX 570	X	X
NVIDIA Quadro FX 560	X	X
NVIDIA Quadro FX 550	X	X
NVIDIA Quadro FX 540	X	X
NVIDIA Quadro FX 370	X	X
NVIDIA Quadro FX 350	X	X
NVIDIA Quadro NVS 440	X	X
NVIDIA Quadro NVS 290	X	X
NVIDIA Quadro NVS 285 PCI-E	X	X

## Supported Languages

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The Release 162 ForceWare Graphics Drivers supports the following languages in the main driver 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)	

# Driver Installation

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## Minimum Hard Disk Space

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The hard disk space requirement is minimum 33 MB for English-only, and 56 MB for International.

## Before You Begin

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If you have previously installed NVIDIA nTune, NVIDIA recommends that you uninstall nTune before installing this driver. After the driver install is complete, you can reinstall NVIDIA nTune.

## Installation Instructions

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- 1 Follow the instructions on the NVIDIA .com Web site driver download page to locate the appropriate driver to download, based on your hardware and operating system.
  - 2 Click the driver download link.
  - 3 The license agreement dialog box appears.
  - 4 Click **Accept** if you accept the terms of the agreement, then either open the file or save the file to your PC and open it later.
  - 5 Extract the zip files to a temporary folder on your PC.
  - 6 Open the NVIDIA driver installation .EXE file to launch the NVIDIA InstallShield Wizard.
  - 7 Follow the instructions in the NVIDIA InstallShield Wizard to complete the installation.
- Note:** After the driver installation, Windows may default to 16-bpp color and disable the Desktop Window Manager (DWM). To work around this issue, set the color to 32-bpp and then reboot the PC.

## NVIDIA Driver History

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Release 162 is the latest NVIDIA Quadro Professional driver available. [Table 3.1](#) contains a summary of some previous driver releases and the versions associated with them. Some versions listed may not have been released outside of NVIDIA.

**Table 3.1** NVIDIA Drivers for Windows Vista

Windows Vista Build	NVIDIA ForceWare Driver
RTM OS Builds 6000 or higher	162.50, 162.62, 162.65
RTM OS Builds 6000 or higher	160.02
RTM OS Builds 6000 or higher	Release 100: Version 100.53, 100.54, 100.59, 100.64, 100.65, 100.75, Release 95: Version 97.46
RC2 OS Builds 5744 or higher	Release 95: Version 96.85
RC1 OS Builds 5520.RC1_16384.060812-2235 or higher	Release 95: Version 96.33
Build 5472.WinMain_idx01_5.060713-1900 or higher	Release 95: Versions 95.60–96.00
Windows Vista Beta2	NVIDIA Driver version 88.61
February 06 CTP build 5308.FebCTP_Final.060217-2200 or higher	NVIDIA Drivers 87.15, 87.45
July 05 Vista Beta1	NVIDIA Driver included 'in the box'.
December 05 CTP build 5270.Winmain.051214-1910	NVIDIA Driver included 'in the box'.

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## A P P E N D I X



## MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 162 driver for NVIDIA products. It contains these sections:

- “General Mode Support Information” on page 28
- “Default Modes Supported by GPU” on page 29
- “Modes Supported by DACs and TV Encoders” on page 36

## General Mode Support Information

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The NVIDIA graphics driver includes a standard list of display modes that are supported by default. These modes are listed in the section “[Default Modes Supported by GPU](#)” on page 29.

The actual modes available depend on the capabilities of the display. In addition, the NVIDIA graphics driver has a “dynamic EDID detection” capability and will make available *additional* modes that are listed in the display EDID, provided the graphics hardware can support it.

The NVIDIA graphics driver also supports the high resolutions available with the displays listed in [Table A.1](#) as well as the non-standard modes listed in [Table A.2](#).

**Table A.1** Modes Supported for High Resolution Displays

Display	Maximum Resolution	Hardware Requirements
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz	<ul style="list-style-type: none"> <li>All high-end NVIDIA Quadro FX graphic solutions.</li> </ul>
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	<ul style="list-style-type: none"> <li>All High-end NVIDIA Quadro FX graphic solutions.</li> </ul>

**Table A.2** Non-standard Modes Supported

Resolution
1680 x 1050
1366 x 768

## Default Modes Supported by GPU

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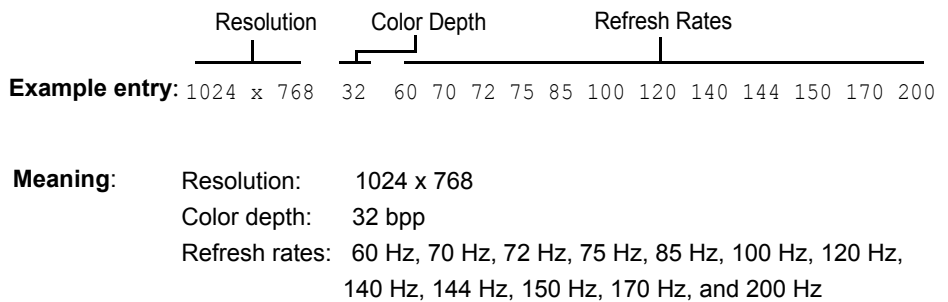
This section lists the modes that are included by default in the driver INF for the following product families:

- “NVIDIA Quadro FX Family of High End GPUs” on page 30
- “NVIDIA Quadro FX 5600 and FX 4600 GPUs” on page 33

### Understanding the Mode Format

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Figure A.1 gives an example of how to read the mode information presented in this section.



**Figure A.1** Mode Format

**Note:**

- Horizontal spanning modes of 3840x1080 and above, and vertical spanning modes of 1920x2160 and above generally require at least 32 MB of video memory at 32 bpp.
- An “i” next to the refresh rate indicates an interlaced refresh rate.

## **NVIDIA Quadro FX Family of High End GPUs**

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This sections lists the supported display resolutions, color depths, and refresh rates for the following products:

- NVIDIA Quadro FX 5500
- NVIDIA Quadro FX 5500 SDI
- NVIDIA Quadro FX 4500 X2
- NVIDIA Quadro FX 4500
- NVIDIA Quadro FX 4500 SDI
- NVIDIA Quadro FX 3400 / Quadro FX 4400
- NVIDIA Quadro FX 4400G
- NVIDIA Quadro FX 4000
- NVIDIA Quadro FX 4000 SDI
- NVIDIA Quadro FX 3500
- NVIDIA Quadro FX 3450 / Quadro FX 4000 SDI
- NVIDIA Quadro FX 1500
- NVIDIA Quadro FX 1400
- NVIDIA Quadro FX 560
- NVIDIA Quadro FX 550
- NVIDIA Quadro FX 540
- NVIDIA Quadro NVS 440
- NVIDIA Quadro NVS 285

### **Standard Modes**

640 x	480	8	60					
800 x	600	8	60	70	75	85	100	
848 x	480	8	60	70	75	85	100	
960 x	600	8	60	70	75	85	100	
1024 x	768	8	60	70	75	85	100	
1152 x	864	8	60	70	75	85	100	
1280 x	768	8	60					
1280 x	800	8	60					
1280 x	960	8	60	70	75	85	100	

1280 x 1024	8	60 70 75 85 100
1360 x 768	8	60
1600 x 1200	8	60 70 75 85 100
1920 x 1200	8	60
1920 x 1440	8	60 70 75 85 100
2048 x 1536	8	60 70 75 85 100

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640 x 480	16	60
800 x 600	16	60 70 75 85 100
848 x 480	16	60 70 75 85 100
960 x 600	16	60 70 75 85 100
1024 x 768	16	60 70 75 85 100
1152 x 864	16	60 70 75 85 100
1280 x 768	16	60
1280 x 800	16	60
1280 x 960	16	60 70 75 85 100
1280 x 1024	16	60 70 75 85 100
1360 x 768	16	60
1600 x 1200	16	60 70 75 85 100
1920 x 1200	16	60
1920 x 1440	16	60 70 75 85 100
2048 x 1536	16	60 70 75 85 100

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640 x 480	32	60
800 x 600	32	60 70 75 85 100
848 x 480	32	60 70 75 85 100
960 x 600	32	60 70 75 85 100
1024 x 768	32	60 70 75 85 100
1152 x 864	32	60 70 75 85 100
1280 x 768	32	60
1280 x 800	32	60
1280 x 960	32	60 70 75 85 100
1280 x 1024	32	60 70 75 85 100
1360 x 768	32	60
1600 x 1200	32	60 70 75 85 100
1920 x 1200	32	60
1920 x 1440	32	60 70 75 85 100
2048 x 1536	32	60 70 75 85 100

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640 x 480	64	60						
800 x 600	64	60	70	75	85	100		
848 x 480	64	60	70	75	85	100		
960 x 600	64	60	70	75	85	100		
1024 x 768	64	60	70	75	85	100		
1152 x 864	64	60	70	75	85	100		
1280 x 768	64	60						
1280 x 800	64	60						
1280 x 960	64	60	70	75	85	100		
1280 x 1024	64	60	70	75	85	100		
1360 x 768	64	60						
1600 x 1200	64	60	70	75	85	100		
1920 x 1200	64	60						
1920 x 1440	64	60	70	75	85	100		
2048 x 1536	64	60	70	75	85	100		

## NVIDIA Quadro FX 5600 and FX 4600 GPUs

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This sections lists the supported display resolutions, color depths, and refresh rates for the following products:

- NVIDIA Quadro FX 5600
- NVIDIA Quadro FX 4600
- NVIDIA Quadro FX 370
- NVIDIA Quadro FX 570
- NVIDIA Quadro FX 1700
- NVIDIA Quadro NVS 290

### Standard Modes

640 x 480	8	60
800 x 600	8	60 70 75 85 100
848 x 480	8	60 70 75 85 100
960 x 600	8	60 70 75 85 100
1024 x 768	8	60 70 75 85 100
1152 x 864	8	60 70 75 85 100
1280 x 768	8	60
1280 x 800	8	60
1280 x 960	8	60 70 75 85 100
1280 x 1024	8	60 70 75 85 100
1360 x 768	8	60
1600 x 1200	8	60 70 75 85 100
1680 x 1050	8	60
1920 x 1200	8	60
1920 x 1440	8	60 70 75 85 100
2048 x 1536	8	60 70 75 85 100

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640 x 480	16	60
800 x 600	16	60 70 75 85 100
848 x 480	16	60 70 75 85 100
960 x 600	16	60 70 75 85 100
1024 x 768	16	60 70 75 85 100
1152 x 864	16	60 70 75 85 100
1280 x 768	16	60

1280 x 800	16	60			
1280 x 960	16	60	70	75	85 100
1280 x 1024	16	60	70	75	85 100
1360 x 768	16	60			
1600 x 1200	16	60	70	75	85 100
1680 x 1050	16	60			
1920 x 1200	16	60			
1920 x 1440	16	60	70	75	85 100
2048 x 1536	16	60	70	75	85 100

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640 x 480	32	60			
800 x 600	32	60	70	75	85 100
848 x 480	32	60	70	75	85 100
960 x 600	32	60	70	75	85 100
1024 x 768	32	60	70	75	85 100
1152 x 864	32	60	70	75	85 100
1280 x 768	32	60			
1280 x 800	32	60			
1280 x 960	32	60	70	75	85 100
1280 x 1024	32	60	70	75	85 100
1360 x 768	32	60			
1600 x 1200	32	60	70	75	85 100
1680 x 1050	32	60			
1920 x 1200	32	60			
1920 x 1440	32	60	70	75	85 100
2048 x 1536	32	60	70	75	85 100

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640 x 480	64	60			
800 x 600	64	60	70	75	85 100
848 x 480	64	60	70	75	85 100
960 x 600	64	60	70	75	85 100
1024 x 768	64	60	70	75	85 100
1152 x 864	64	60	70	75	85 100
1280 x 768	64	60			
1280 x 800	64	60			
1280 x 960	64	60	70	75	85 100
1280 x 1024	64	60	70	75	85 100
1360 x 768	64	60			
1600 x 1200	64	60	70	75	85 100

1680 x 1050	64	60							
1920 x 1200	64	60							
1920 x 1440	64	60	70	75	85	100			
2048 x 1536	64	60	70	75	85	100			

## Modes Supported by DACs and TV Encoders

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This section lists the supported modes and formats for the following:

- “External DAC Mode Support” on page 36
- “TV-Out Mode Support” on page 37

### External DAC Mode Support

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#### Fairchild FMS3815 Modes Supported

Table A.3 shows the refresh rates for various resolutions of the Fairchild FMS3815 external DAC, which is commonly used on GeForce2 MX and Quadro2 MXR boards to drive a secondary CRT.

**Table A.3** External DAC Modes (Fairchild FMS3815)

Resolution	Supported Rates (Hz)
640x480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
800x600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
1024x768	60, 70, 72, 75, 85, 100, 120
1152x864	60, 70, 72, 75, 85
1280x720	60, 70, 72, 75, 85, 100
1280x960	60, 70, 72, 75
1280x1024	60, 70, 72, 75
1360x768	60, 70, 72, 75, 85
1600x900	60, 70
1600x1200	—

#### Analog Devices ADV-7123 Modes Supported

Table A.4 shows the refresh rates for various resolutions of the Analog Devices ADV-7123 external DAC, which is commonly used on the GeForce2 MX and the Quadro2 MXR boards to drive a secondary CRT.

**Table A.4** External DAC Modes (Analog Devices ADV-7123)

Resolution	Supported Rates (Hz)
640x480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
800x600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
1024x768	60, 70, 72, 75, 85, 100, 120
1152x864	60, 70, 72, 75, 85, 100
1280x720	60, 70, 72, 75, 85, 100
1280x960	60, 70, 72, 75, 85, 90

**Table A.4** External DAC Modes (Analog Devices ADV-7123) (continued)

Resolution	Supported Rates (Hz)
1280x1024	60, 70, 72, 75, 85
1360x768	60, 70, 72, 75, 85, 100
1600x900	60, 70, 75
1600x1200	—

## TV-Out Mode Support

Table A.5 and Table A.6 list the NTSC, PAL, and HDTV TV-Out modes supported by the NVIDIA driver.

**Table A.5** Mode Support for S-Video and Composite Out

Resolution	Bit depth	Comments
320x200	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
320x240	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640x400	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640x480	8, 16, 32	
720x480	8, 16, 32	Overscans (for video)
720x576	8, 16, 32	Overscans (for video)
800x600	8, 16, 32	
1024x768	8, 16, 32	Conexant 25871 only

**Table A.6** Mode Support for Component YPrPb Out and DVI Out

Resolution	Comments
480i (SDTV)	Supported on graphics boards with Conexant 875 or Philips 7108 TV encoders and compatible connectors, and compatible GeForce 6 Series and GeForce 7 Series GPUs.
480p (EDTV)	
720p (HDTV)	
1080i (HDTV)	
576i (PAL)	
576p (PAL)	

The driver supports manual overscan correction for component and DVI outputs. See the *ForceWare Graphics Driver User's Guide* for instructions on how to use the overscan correction features in the control panel.