



NVIDIA Quadro Professional Drivers ***Release 160 Notes***

Version 160.02

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

**NVIDIA Corporation
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Confidential Information

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CHAPTER

1

INTRODUCTION TO *RELEASE 160 NOTES*

This edition of *Release 160 Notes* describes the Release 160 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

This document is organized in the following sections:

- “[Release 160 Driver Changes](#)” on page 3 gives a summary of changes, and fixed and open issues in this version.
- “[The Release 160 Driver](#)” on page 19 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 29 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release 160 Notes* for Windows Vista includes information about NVIDIA ForceWare graphics driver version 160.02, and lists changes made to the driver since versions 100.65 and 100.75. These changes are discussed beginning with the chapter “[Release 160 Driver Changes](#)” on page 3.

CHAPTER

2

RELEASE 160 DRIVER CHANGES

This chapter describes open issues for version 160.02, and resolved issues and driver enhancements for versions of the Release 160 driver up to version 160.02. The chapter contains these sections:

- “Version 160.02 Highlights” on page 4
- “Changes in Version 160.02” on page 9
- “Open Issues in Version 160.02” on page 11
- “Not NVIDIA Issues” on page 12
- “Known Product Limitations” on page 17

Version 160.02 Highlights

This section provides highlights of version 160.02 of the NVIDIA Release 160 Driver for Windows Vista.

- [What's New in Version 160.02](#)
- [Limitations in This Release](#)
- [Special Instructional Notes for this Release](#)

What's New in Version 160.02

New Features

- **NVIDIA SLI Support with DirectX 9 and OpenGL**
- **V-Sync Control**

V-Sync control through the NVIDIA Control Panel is now supported for DirectX applications.

- **New Version 1.5 of the NVIDIA Control Panel**

Highlights:

- The explorer bar on the left-side pane—with Help, Recent Tasks, and Related Tasks sections—has been replaced by a navigation tree that let's you easily locate the page you need for accomplishing tasks.
- Tasks are still organized by groups, but the navigation tree eliminates the need for the main category pages, reducing the steps needed to get to a task.
- When you re-open the NVIDIA Control Panel, it opens to the last page you visited.

Limitations in This Release

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).

- **Full-featured HDMI Support**

The following are known problems that will be fixed in a future driver version:

- There are some known image quality issues.
- Noise and pixel corruption occur under Clone or Dualview modes.
- Only stereo audio is supported; 5.1 surround is not supported.

- **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.

- **Overscan/Underscan Support**

The ability to display the entire desktop on a TV is not supported—the desktop will be masked instead.

NVIDIA has not implemented full underscan compensation control in the drivers yet. However, end users can access 8% underscan compensation from the Windows Vista Display Properties Control Panel on an HDTV as follows:

- 1 Open the Windows Control Panel, click Classic View, then double-click **Personalization**

- 2 Click **Display Settings**, then click **Advanced Settings**.
- 3 Click the Monitor Tab.
- 4 Clear (uncheck) the **Hide modes that this monitor cannot display** checkbox, then click **OK**.

Once this is done, HDTV users will now see up to two new "underscanned" modes on the Windows Display Settings Control Panel, depending on their HDTV—1176x656 for 720p modes and 1768x992 for 1080i/1080p modes.

To switch between the interlaced and progressive modes for 1768x992,

- 1 Click **Advanced Settings**, then click the Adapter Tab.
- 2 Click **List all modes**, then locate the modes that are appended with "interlaced" or "progressive" and click the appropriate mode.
- 3 Click **OK**, then click **OK** or **Apply**.

- **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**

The driver is capping Shared System Memory at 255 MB on systems with 1 GB of system memory, and at 271 MB on systems with 2 GB or more of system memory. An upcoming driver will increase this amount of memory.

Optimum performance will not be achieved with low frame buffer TurboCache graphics cards.

- **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

This section clarifies instructions for successfully accomplishing the following tasks:

Enabling 3D Stereo with Multiple Displays

To make sure that you successfully enable 3D stereo in a multi-display configuration, you must first enable stereo in single-display mode and then close the NVIDIA Control Panel before setting up multi-display modes. Otherwise, you will lose your stereo settings.

1 Enable 3D stereo

- 1 Open the NVIDIA Control Panel, then set single-display mode using the Set Up Display Configuration page.
- 2 Set stereo settings using the Manage 3D Settings page.
- 3 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 Display Configuration page, set the desired multi-display mode.

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

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 160.02

The following sections list the changes made and issues resolved since driver version 100.75 and 100.65.

- “Fixed Issues–Windows Vista 32-bit” on page 9
- “Fixed Issues–Windows Vista 64-bit” on page 10

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

Fixed Issues–Windows Vista 32-bit

- NVIDIAI Quadro FX 5600/4600: Studio 10 Liquid–using the DirectX 9 path, there are missing triangles in the triangle strip.
- NVIDIA Quadro FX 4600/5600: After Effects CS3–Alpha Test is ignored when generating the shadow map.
- NVIDIA Quadro FX 350: AutoCAD 200–Full Shadows test case times out.
- Workstation: AutoCAD 2007–the gooch effect is displayed incorrectly when using clipped objects.
- Various applications show colored lines (usually black) in the top right corner of screen.
- SLI Mode: When disabling SLI mode from the NVIDIA Control Panel, no dialog box appears to prompt the user to reboot the system. *A reboot is required to properly disable SLI mode in the driver.*
- NVIDIA Control Panel antialiasing does not work with games that use *high dynamic range* (HDR) rendering, such as Oblivion and Rainbow Six Vegas.
- NVIDIA Control Panel Desktop Color Settings are not saved after closing and then re-opening the control panel.
- NVIDIA Cascades demo has some sparkle artifacts.
- With Aero turned on, the transparency effects on some windows are misapplied, resulting in horizontal bands of pixel corruption.

Fixed Issues—Windows Vista 64-bit

- After Effects 7 and 8 shows instability on a system with greater than 4 GB of system memory installed.
- NVIDIA Control Panel Desktop Color Settings are not saved after closing and then re-opening the control panel.

Open Issues in Version 160.02

As with every released driver, version 160.02 of the Release 160 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.

- [“NVIDIA Recommendations” on page 11](#)
- [“Windows Vista x86 Issues” on page 11](#)
- [“Windows Vista x64 Issues” on page 11](#)

NVIDIA Recommendations

- Running NVIDIA SLI without an over the top SLI connector is not recommended at this time.

Windows Vista x86 Issues

- MediaComposer video playback does not update properly.
- NVIDIA Quadro FX 550/530: The NVIDIA WDDM driver cannot be uninstalled.
- On resume from sleep state, the monitor screen is black (no video) but computer is still on.
- When S-video and DVI displays are set up in Clone mode and rotated 90 degrees, the screen turns black.
- Workstation: Maya 8.5—there is corruption in the Viewports after resuming from standby.

Windows Vista x64 Issues

- NVIDIA Quadro FX 1400: Dassault fails to launch after uninstalling the NVIDIA driver.
- Maya crashes when running specific performance tests in Dualview mode.
- NVIDIA Quadro FX 3400: Ansys Workbench V11 crashes when going from the Start page directly to the Geometry module.
- Workstation: Maya 8.5—there is corruption in the Viewports after resuming from standby.
- Workstation: Solid Edge v20—64-bit Solid Edge aborts when you open an existing file.

Not NVIDIA Issues

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 12
- [“Unsupported Features”](#) on page 12
- [“OpenGL Application Issues”](#) on page 14
- [“Application Issues”](#) on page 15

Windows Vista Limitations

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

- Selecting Vertical Sync (vsync) from the NVIDIA Control Panel does not affect DirectX applications.

Due to architectural changes in the new Windows Vista Window Display Driver Model (WDDM), the graphics driver can no longer disable vsync from its own driver or Control Panel. Selecting this option from the NVIDIA Control Panel will have no effect with DirectX applications. For applications that use DirectX on Windows Vista, use the vertical sync setting within the application.

This applies only to DirectX applications. The NVIDIA Control Panel vertical sync option works on OpenGL applications.

- 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

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.

- **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.

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

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

- **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.

Known Product Limitations

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 17
- “Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards” on page 17
- “Applying Workstation Application Profiles” on page 18
- “Gigabyte GA-6BX Motherboard” on page 18

SLI Connector Requirement on NVIDIA Quadro SLI Cards

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

- **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

- **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

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 160 DRIVER

This chapter covers the following main topics:

- “Hardware and Software Support” on page 19
- “Driver Installation” on page 22
- “NVIDIA Driver History” on page 27

Hardware and Software Support

Supported Operating Systems

The Release 160 driver, version 160.02, 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 160 driver.

Table 3.1 Supported NVIDIA Workstation Products

Product	Windows XP 32-bit Windows 2000	Windows XP Professional x64
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 1500	X	X
NVIDIA Quadro FX 1400	X	X
NVIDIA Quadro FX 560	X	X
NVIDIA Quadro FX 550	X	X
NVIDIA Quadro FX 540	X	X
NVIDIA Quadro FX 350	X	X
NVIDIA Quadro NVS 440	X	X
NVIDIA Quadro NVS 285 PCI-E	X	X

Supported Languages

The Release 160 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

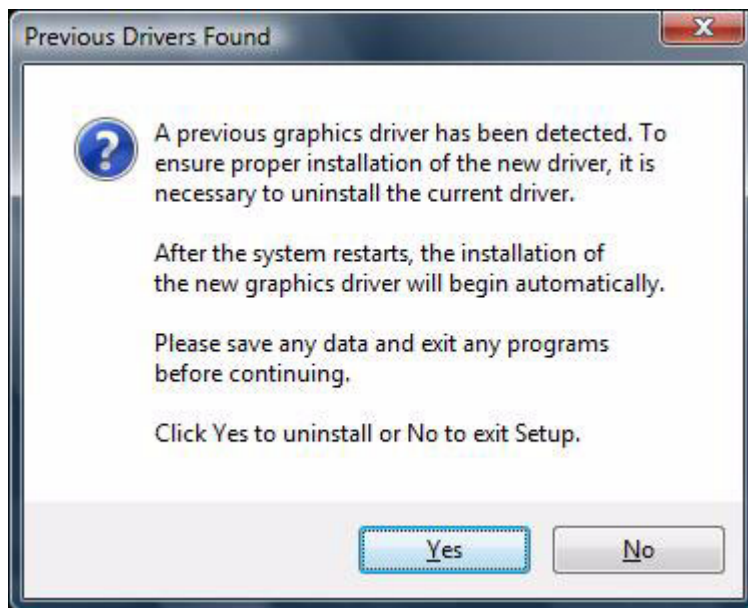
Minimum Hard Disk Space

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

Installation Instructions

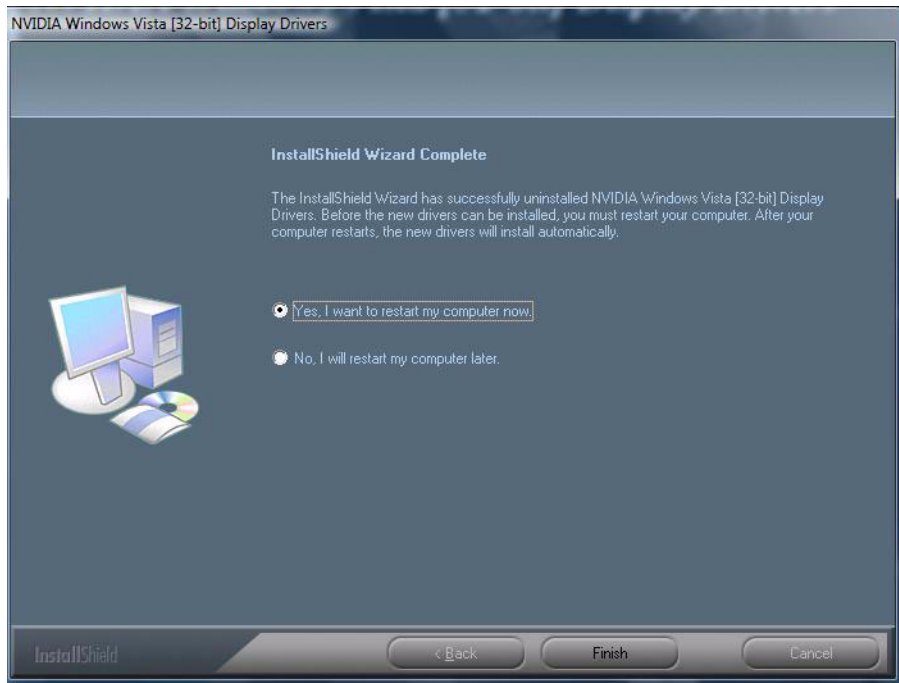
Please read these instructions carefully before installing any new Windows Vista (32-bit or 64-bit) ForceWare driver. NVIDIA recommends that users bookmark this page to refer to it after downloading the driver.

- 1 Download the new ForceWare driver kit to your computer.
Note: Do not install the driver from a shared network location as the install process may not complete.
- 2 Double-click the driver kit to launch the installation process.
If previous drivers were installed on your computer, the NVIDIA Setup program will detect these drivers and prompt you to uninstall the drivers.



- 3 Click "Yes" to complete this process and uninstall previous drivers.

The driver uninstaller will now remove previous driver files and when it is complete, it will prompt you to reboot your computer.

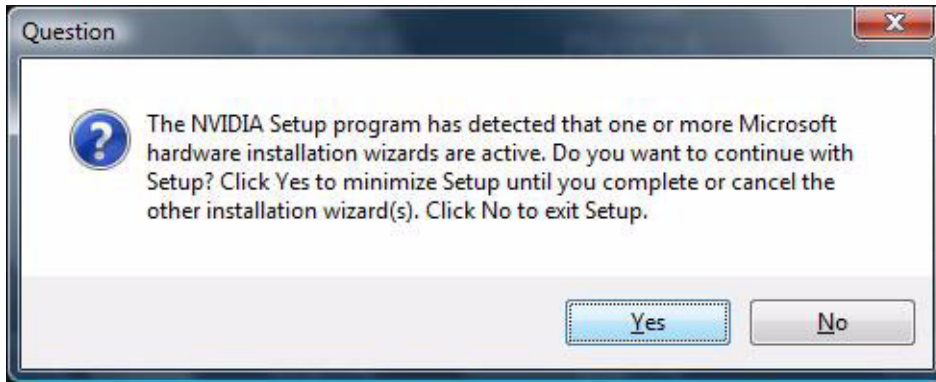


4 Select "Yes, I want to restart my computer now."

Due to changes in how device driver installation occurs on Windows Vista, some users may see the "Previous Driver Found" prompt multiple times after rebooting their computer. This is expected since it is the NVIDIA Setup program removing all previous drivers on your computer.

Continue to repeat the uninstall process until all drivers are removed.

After all drivers have been removed, the NVIDIA Setup program may prompt you that it has detected that the Microsoft hardware installation wizard is active.



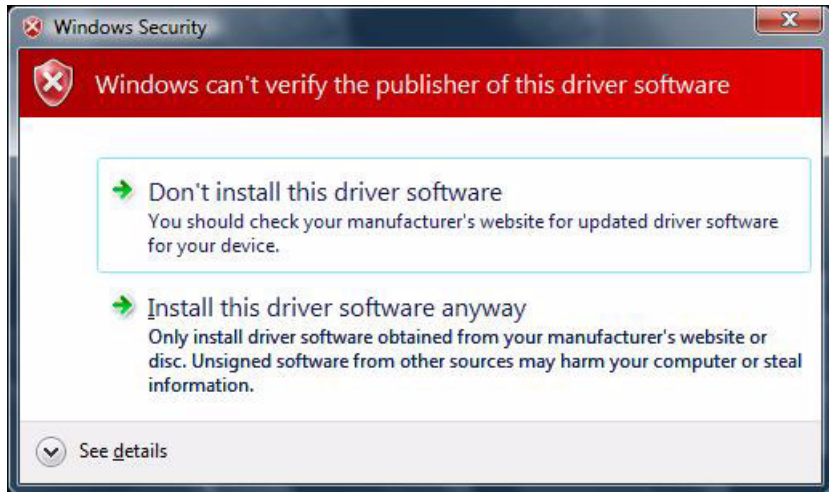
- 5 Select "Yes" to continue the driver installation.
 - After clicking "Yes", the Windows Vista Found New Hardware wizard may prompt you to install driver software for your GPU.



Continue the NVIDIA Setup program by selecting "Don't show this message again for this device".

- If you are installing a driver that has not received the Windows Hardware Logo Program (WHQL) certification, the Windows Security notification will appear, warning you that "Windows can't verify the publisher of this

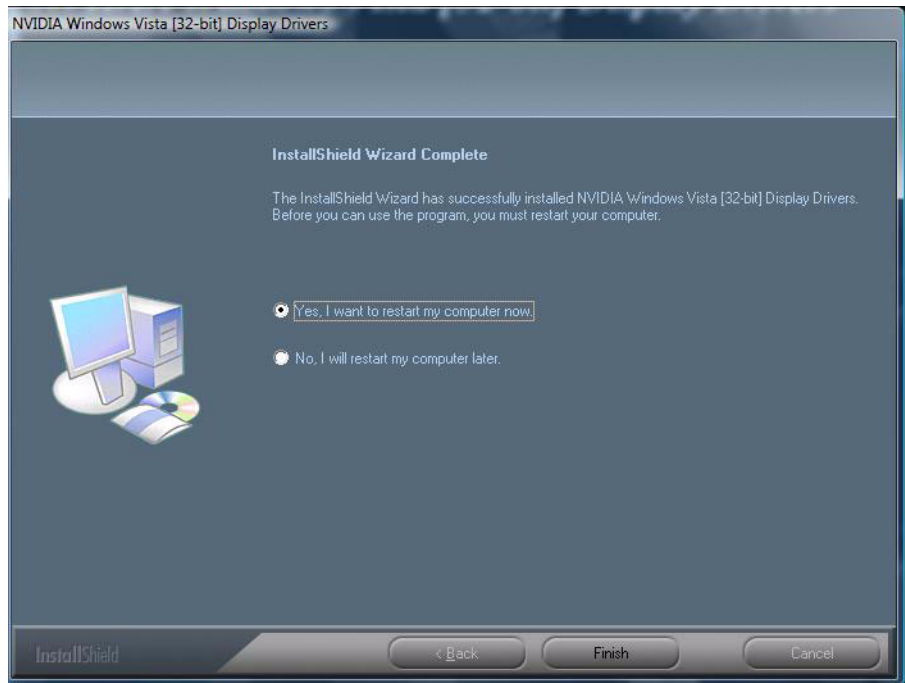
driver software." (Drivers with the WHQL certification will not show this notification.)



If you wish to continue the install, select "Install this driver software anyway."

- During the driver installation, your screen may go black for a period of time as the driver loads and detects the monitors connected to your computer. This can happen a few times during install and is normal. This should not occur after the driver has completed installation

- When the driver install is complete, it will prompt you to reboot your computer.



- 6 Select "Yes, I want to restart my computer now."
Driver installation is now complete.

NVIDIA Driver History

Release 160 is the latest NVIDIA 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	Release 100: Version 100.53, 100.54, 100.59, 100.64, 100.65, 100.75, 160.02 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'.

A P P E N D I X



MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 160 driver for NVIDIA products. It contains these sections:

- “General Mode Support Information” on page 30
- “Default Modes Supported by GPU” on page 31
- “Modes Supported by DACs and TV Encoders” on page 37

General Mode Support Information

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 31.

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"> All high-end NVIDIA Quadro FX graphic solutions.
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	<ul style="list-style-type: none"> All High-end NVIDIA Quadro FX graphic solutions.

Table A.2 Non-standard Modes Supported

Resolution
1680 x 1050
1366 x 768

Default Modes Supported by GPU

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 32
- “NVIDIA Quadro FX 5600 and FX 4600 GPUs” on page 35

Understanding the Mode Format

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

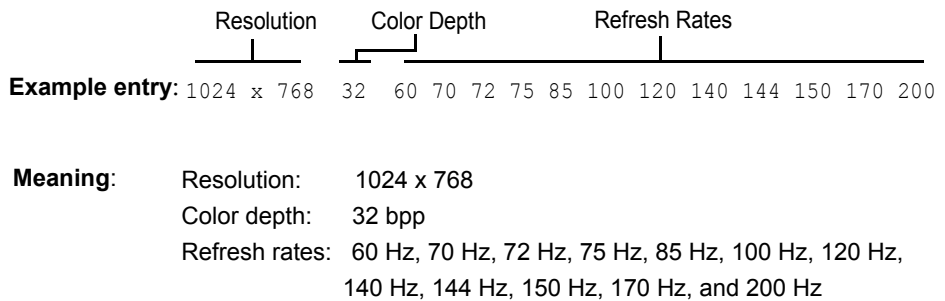


Figure A.1 Mode Format

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

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

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

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

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

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

- NVIDIA Quadro FX 5600
- NVIDIA Quadro FX 4600

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

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	

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	

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

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

- “External DAC Mode Support” on page 37
- “TV-Out Mode Support” on page 38

External DAC Mode Support

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.