



Release 325 Quadro & NVS Notebook Drivers for Windows - Version 327.23

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Windows Vista, Windows 7, Windows 8, & Windows 8.1

Release Notes



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01 INTRODUCTION TO RELEASE NOTES

This edition of *Release Notes* describes the Release 325 family of NVIDIA Quadro and NVS Notebook Drivers for Microsoft® Windows® 7 and later¹. 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 325 Driver Changes](#)” on page 2 gives a summary of changes, and fixed and open issues in this version.
- ▶ “[The Release 325 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

This edition of the *Release Notes* for Windows 7 and later includes information about NVIDIA graphics driver version 327.23, and lists changes made to the driver since version 320.49. These changes are discussed beginning with the chapter “[Release 325 Driver Changes](#)” on page 2.

1. Includes Windows 7, Windows 8, and Windows 8.1

02 RELEASE 325 DRIVER CHANGES

This chapter describes open issues for version 327.23, and resolved issues and driver enhancements for versions of the Release 325 driver up to version 327.23. The chapter contains these sections:

- ▶ “Version 327.23 Highlights” on page 3
- ▶ “Advanced Instructions for this Release” on page 6
- ▶ “Changes in Version 327.23” on page 8
- ▶ “Changes in Version 326.19” on page 9
- ▶ “Open Issues in Version 327.23” on page 10
- ▶ “Not NVIDIA Issues” on page 11
- ▶ “Known Product Limitations” on page 16

Version 327.23 Highlights

This section provides highlights of version 327.23 of the NVIDIA Release 325 Driver for Windows Vista and later.

- ▶ Existing Support
- ▶ What's New in Release 325
- ▶ What's New in Version 327.23
- ▶ Discontinued and Unsupported Features in this Release
- ▶ Limitations in This Release

Existing Support

This release supports the following APIs:

- ▶ Open Computing Language (OpenCL) 1.1 in Quadro FX Series x700 .
- ▶ OpenGL 4.3
- ▶ DirectX 11
- ▶ CUDA 5.5

What's New in Release 325

The section summarizes the following driver changes in Release 325 since Release 319:

NVIDIA Control Panel

▶ **Workstation->EDID Management**

Added controls to improve productivity by providing a way to force an EDID on multiple connectors at a time, instead of one at a time.

▶ **Display->Change Resolution**

Added controls to import or export custom resolutions. Allows users to create a custom resolution and then export it to a file which can be imported for recreating the same set of custom resolutions on the same system or across systems.

Enterprise Management Tools

NVWMI 2.14

- ▶ Added support for creating multiple display grids.
- ▶ Added support for passive stereo modes.

Workstation Developer APIs and Support

Viewport Scanout with Warp and Blend

Added support via NVAPI for viewport scanout with warp and blend. The warp NVAPI interface supports viewport scanout on custom resolutions.

What's New in Version 327.23

- ▶ This driver offers performance improvements over previous driver versions, including workstation compatibility fixes.
- ▶ This driver installs **nView Desktop Manager** version 140.62.
- ▶ See [“Changes in Version 327.23” on page 8](#) for a list of changes and resolved issues in this driver version.

Discontinued and Unsupported Features in this Release

Discontinued Features

- ▶ The NVIDIA® AutoCAD Performance driver is no longer integrated in the graphics driver.

Standalone versions or version updates can still be downloaded from the NVIDIA driver download page.

- ▶ The following features are removed from the NVIDIA Control Panel
 - The Views option

You no longer need to select between Standard and Advanced views for many NVIDIA Control Panel controls.
 - The Profiles menu
- ▶ Support for Quadro SDI products is discontinued for Windows 8 and later operating systems.
- ▶ Legacy Support for Curie generation of Workstation products

Beginning with Release 310, the NVIDIA professional drivers no longer support the Curie generation of Workstation products.

NVIDIA Quadro FX 3500M
NVIDIA Quadro FX 2500M
NVIDIA Quadro FX 1500M
NVIDIA Quadro FX 560M
NVIDIA Quadro FX 560M
NVIDIA Quadro FX 350M

NVIDIA Quadro NVS 120M

Release 304 drivers continue to support Curie generation Workstation products, and NVIDIA will continue to address driver issues for these products in driver branches up to and including Release 304. However, future driver enhancements and optimizations in driver releases after Release 304 will not support Curie generation products.

Limitations in This Release

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

► Video Memory Support

For Windows 7 and Windows Vista 64-bit, this driver recognizes up to the total available video memory on Quadro cards for Direct3D and OpenGL applications.

For Windows 7 and Windows Vista 32-bit, this driver recognizes only up to 4 GB of video memory on Quadro cards for DirectX, OpenGL, and CUDA applications.

► NVIDIA Control Panel Display Category

- The Graph tab on the Adjust Desktop Color Settings page is not available.

Advanced Instructions for this Release

This section clarifies instructions for successfully accomplishing the following tasks:

- ▶ Docking/Undocking Notebooks with Mosaic
- ▶ Turning Off V-Sync to Boost Performance
- ▶ NVIDIA Application Configuration Engine (ACE)

Docking/Undocking Notebooks with Mosaic

When using a docked Quadro notebook that is configured for NVIDIA Mosaic, you must disable Mosaic before undocking the notebook.

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 make sure that *Advanced Settings* is selected from the control panel tool bar.
- 2 From the *Select a Task* pane, under 3D Settings, click **Manage 3D Settings**, then click the Global Settings tab.
- 3 From the Global presets pull-down menu, select **Base profile**.
- 4 From the Settings list box, select **Vertical sync** and change its value to **Force off**, then click **Apply**.
- 5 From the Global presets pull-down 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.

NVIDIA Application Configuration Engine (ACE)

This driver includes the NVIDIA Application Configuration Engine (ACE), which automatically detects the workstation application and configures the appropriate profile settings in the NVIDIA Control Panel.

See the *NVIDIA Quadro Professional Drivers: NVIDIA Control Panel Quick Start Guide* for more information about this feature.

Changes in Version 327.23

The following sections list the important changes and the most common issues resolved since driver version 326.19.

Windows Vista/Windows 7/Windows 8 Fixed Issues

- ▶ [Vegas Pro 12]: The driver crashes in nvoglv64.DLL ("NVIDIA Compatible OpenGL ICD").
- ▶ [AVID Motion Graphics]: The application performance has dropped since driver version 307.32.
- ▶ [NVIDIA Nsight]: The application crashes when launched.
- ▶ [Mantis][Quadro 6000][G-Sync]: The application locks up in SwapBuffers() when using G-Sync.
- ▶ [Quadro 6000/K600]: The driver crashes in clCreateFromGLBuffer when many instructions are in the pipeline and graphics memory use is high.
- ▶ [Quadro 600]: The primary display automatically switches to a second DVI display once the new display is connected.
- ▶ [Quadro FX 1700]: There is a 10x performance drop after driver version 275.89.
- ▶ [Quadro FX 3800/4800]: There is a 3x performance drop after driver version 275.89.

Changes in Version 326.19

The following sections list the important changes and the most common issues resolved since driver version 320.00.

Windows Vista/Windows 7 Fixed Issues

- ▶ [Cinema 4D]: Threaded optimization causes the application to respond slowly.
- ▶ Quadro 6000: GLSL break statement is broken.
- ▶ [Quadro 2000][Catia]: When repeatedly zooming in and out a model, the application becomes unresponsive and a driver “lost connection” error occurs.
- ▶ [Quadro 4000]: Sampler uniforms do not retain their values.
- ▶ [Quadro FX 4800/5800][CUDA]: With CUDA enabled, SD files appear corrupt when played on an HD timeline. [

Open Issues in Version 327.23

As with every released driver, version 327.23 of the Release 325 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/Windows 7 32-bit Issues”](#) on page 10
- ▶ [“Windows Vista/Windows 7 64-bit Issues”](#) on page 10

Windows Vista/Windows 7 32-bit Issues

- ▶ Cinema 4D—performance improvements are requested.
- ▶ NVIDIA Control Panel: Pro E Wildfire 5—the application doesn't appear in the NVIDIA Control Panel->Manage 3D Settings page 'show only programs found on this computer' list.
- ▶ [Quadro FX 1800M]: clCreateFromGLTexture2D fails with Mipmaps.

Windows Vista/Windows 7 64-bit Issues

- ▶ NVIDIA Control Panel: Pro E Wildfire 5—the application doesn't appear in the NVIDIA Control Panel->Manage 3D Settings page 'show only programs found on this computer' list.
- ▶ Cinema 4D—performance improvements are requested.
- ▶ [Kepler-class GPUs][Mudbox 2014]: Shadows are not visible.

Windows 8 64-bit Issues

- ▶ [Kepler-class GPUs][Mudbox 2014]: Shadows are not visible.

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 7.

- ▶ “Windows Vista Considerations” on page 11
- ▶ “Windows 7 Considerations” on page 11
- ▶ “Unsupported Features” on page 12
- ▶ “OpenGL Application Issues” on page 14
- ▶ “OpenGL Application Issues” on page 14
- ▶ “Application Issues” on page 14
- ▶ “Other Issues” on page 14

Windows Vista Considerations

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

- ▶ **Gamma ramps are inconsistent between single and two-headed systems.**
- ▶ **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>.

Windows 7 Considerations

Windows DWM Disabled for SLI Mosaic Mode

Due to compatibility issues, when using SLI Mosaic mode the driver turns off the Windows 7 Desktop Window Manager (DWM). As a result, DWM-managed desktop features such as Windows Aero or Windows Flip 3D will not be available.

Hotplug Action

Unlike the hotplug activity under Windows Vista, the default settings are not applied when a new display is hotplugged, and there is no message balloon alert stating that a new display was detected. Under Windows 7, all display connection and detection events are handled through the Windows 7 Connecting and Configuring Displays (CCD) mechanism.

NVIDIA Control Panel Rotate Display Page

The rotation radio button labels are changed slightly under Windows 7 to be consistent with the Microsoft panel

Table 2.1 NVIDIA Control Panel Rotation Page Radio Buttons

Clockwise Rotation	Windows 7 Label	Windows Vista Label
0 degrees	Landscape	No rotation (Landscape)
90 degrees	Portrait	90 degrees to the right (Inverted Portrait)
180 degrees	Landscape (flipped)	180 degree rotation (Inverted landscape)
270 degrees	Portrait (flipped)	90 degrees to the left (Portrait)

Limitation

- ▶ When switching the refresh rate from 59 Hz to 60Hz, the refresh rate remains at 59 Hz.
See the Microsoft KB article KB2006076 at <http://support.microsoft.com/kb/2006076>.

Unsupported Features

The following are features and functionality that were available in driver releases supporting Windows XP, but are not—and will not be—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**
- ▶ **OpenGL Video Overlays**
This is an operating system limitation.
- ▶ **Overclocking**
GPU overclocking is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA System Tools 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 System Tools software, which you can download from NVIDIA.com.
- ▶ **AGP Settings Adjustment**

▶ **Video Zoom**

- ▶ **Pan & Scan** - the process of panning across the desktop in order to display a desktop on a monitor with lower resolution

▶ **Per-display Desktop Color Setting Adjustments**

For Clone mode, the desktop 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.

▶ **Per-display Video Color Setting Adjustments**

For Dualview mode, the 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.

▶ **Edge Blending**

▶ **Run display optimization wizard**

▶ **Run multiple display wizard**

▶ **Run television setup wizard**

▶ **nView Horizontal and Vertical Span Modes**

Due to architectural changes in the new Windows Vista Window Display Driver Model (WDDM), span mode is available only with NVIDIA Mosaic Technology.

- ▶ **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)

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
- ▶ 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

- ▶ Softimage–The application crashes when thumbing the CgFX scene model while in wireframe display mode.
- ▶ Solidworks 2009–Application profile is not shown in the NVIDIA Control Panel when SolidWorks 2009 is installed.
 - This is an issue with the application shortcut.*
- ▶ ArchiCAD–the driver crashes when navigating 3D shadows.
- ▶ ArchiCAD12–OpenGL speed is half as fast on Windows Vista than on Windows XP.
- ▶ CATIA V5R20–not all drawing elements appear if the drawing is created using Approximate mode.

Other Issues

- ▶ All older drivers from other vendors must be uninstalled first.
- ▶ The Windows Vista display mode switches from Aeroglass to Basic when a quad-buffer for stereo is created.
- ▶ Quad-buffered windowed stereo is only supported with Aeroglass turned off.

- ▶ The NVIDIA Control Panel->Set Up Multiple Displays page does not provide the capability of setting the dual monitor order under Windows Vista as it does under Windows XP.

This capability is provided through the Windows Vista Display Properties Settings page.

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:

- ▶ “Some APIs do not Report Total Available Graphics Memory Correctly” on page 16
- ▶ “Using HDMI/DisplayPort Audio with Displays that have a High Native Resolution” on page 18
- ▶ “Using HDMI/DisplayPort Displays that do not Support Audio” on page 18
- ▶ “Using HDMI/DisplayPort Audio in Dualview or Clone Mode Configurations” on page 19
- ▶ “GPU Runs at a High Performance Level (full clock speeds) in Multi-display Modes” on page 19
- ▶ “Aero Must be Enabled for Windowed SLI AFR Mode Under Vista” on page 19
- ▶ “SLI Connector Requirement on NVIDIA Quadro SLI Cards” on page 20
- ▶ “Applying Workstation Application Profiles” on page 20
- ▶ “1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors” on page 20
- ▶ “Gigabyte GA-6BX Motherboard” on page 20

Some APIs do not Report Total Available Graphics Memory Correctly

Background-TAG Memory

In the Windows Display Driver Model (WDDM), Total Available Graphics (TAG) memory is reported as the sum of

- Dedicated Video Memory (video memory dedicated for graphics use)
- Dedicated System Memory (system memory dedicated for graphics use), and
- Shared System Memory (system memory shared between the graphics subsystem and the CPU).

The values for each of these components are computed according to WDDM guidelines when the NVIDIA Display Driver is loaded.

Issue

NVIDIA has found that some TAG-reporting APIs represent video memory using 32-bits instead of 64-bits, and consequently do not properly report available graphics memory when the TAG would otherwise exceed 4 gigabytes (GB). This results in under reporting

of available memory and potentially undesirable behavior of applications that rely on these APIs to report available memory.

The reported memory can be severely reduced. For example, 6 GB might be reported as 454 MB, and 8 GB might be reported as 1259 MB.

NVIDIA Action for Some GeForce-based Systems

For GeForce GPUs with 2.75 GB or less of video memory, the NVIDIA display driver constrains TAG memory to just below 4 GB¹. In this scenario, the Shared System Memory component of TAG is limited first, before limiting Dedicated Video Memory.

This is a policy decision within the driver, and results in reliable reporting of sub-4 GB TAG memory.

When TAG Reporting Would Not Be Limited

For GeForce-based GPUs with more than 2.75 GB of video memory, as well as all Quadro and Tesla GPUs, the NVIDIA display driver does not constrain TAG memory reporting.

The disadvantage of constraining TAG on systems with larger amounts of video and system memory is that memory which otherwise would be available for graphics use is no longer available. Since shared system memory is limited first, driver components and algorithms utilizing shared system memory may suffer performance degradation when TAG is constrained.

Since these and similar scenarios are prevalent in many Workstation applications, the NVIDIA driver avoids constraining TAG on all Quadro and Tesla-based systems. Likewise, the driver does not constrain TAG for GeForce-based systems with more than 2.75 GB of video memory.

1. The WDDM guidelines dictate minimum and maximum values for the components, but the display driver may further constrain the values that are reported (within the allowed minimum and maximum).

Using HDMI/DisplayPort Audio with Displays that have a High Native Resolution

To use HDMI/DisplayPort audio with some displays that have a native resolution higher than 1920x1080, you must set the display to a lower HD resolution.

Some HDMI TV's have a native resolution that exceeds the maximum supported HD mode. For example, TVs with a native resolution of 1920x1200 exceed the maximum supported HD mode of 1920x1080.

Applying this native mode results in display overscan which cannot be resized using the NVIDIA Control Panel since the mode is not an HD mode.

To avoid this situation and provide a better user experience, the driver treats certain TVs—such as the Viewsonic VX2835wm and the Westinghouse LVM- 37w3—as a DVI monitor when applying the native mode. Because the driver does not treat the TV as an HDMI in this case, the HDMI audio is not used.

Using HDMI/DisplayPort Displays that do not Support Audio

Some HDMI/DisplayPort displays do not support audio, or have issues with Quadro FX family and earlier NVIDIA graphics cards.

The NVIDIA driver attempts to identify such displays and automatically disables the audio. For example, the NVIDIA driver disables HDMI audio for all Philips HDMI TVs, as these have been identified as having issues with Quadro FX family and earlier NVIDIA graphics cards.

There may be cases where either the driver disables audio even though there is no problem, or does not disable the audio when in fact the audio does not work. The following sections describe these situations and provides guidance for handling them.

Corrupted video and no audio

The driver has not disabled audio and the display's audio signal is incompatible with the graphics card, causing video corruption.

With a different display connected in order to establish video, disable audio for the HDMI display using the NVIDIA Control Panel-> Change Resolution page. From the connector list, select **HDMI-HDTV (Audio Disabled)**.

Video but no audio

- ▶ Check the connector list on the NVIDIA Control Panel->Change Resolution page.
- ▶ If **HDMI-HDTV (Audio Disabled)** is selected and you want to test whether your HDMI audio does, in fact, work, then select **HDMI-HDTV (Audio Enabled)** and the driver will prompt you with instructions for testing HDMI audio with the display.
- ▶ If **HDMI-HDTV (Audio Enabled)** is selected, then the driver has not successfully detected that an incompatible display is connected.

Future drive versions will properly identify such displays and disable audio.

- ▶ If there is no HDMI connector option in the NVIDIA Control Panel->Change Resolution page, the display does not support audio and has properly reported this to the NVIDIA driver.

Using HDMI/DisplayPort Audio in Dualview or Clone Mode Configurations

Two Audio-enabled Ports

In a multi-display configuration where both HDMI/DisplayPort audio ports are enabled, only the primary display will provide the audio.

One Audio-enabled Port

In a multi-display configuration where only one audio port is enabled, such as when one display is a DVI display, then the HDMI/DisplayPort display can provide the audio whether is it the primary or secondary display.

GPU Runs at a High Performance Level (full clock speeds) in Multi-display Modes

This is a hardware limitation and not a software bug. Even when no 3D programs are running, the driver will operate the GPU at a high performance level in order to efficiently drive multiple displays. In the case of SLI or multi-GPU PCs, the second GPU will always operate with full clock speeds; again, in order to efficiently drive multiple displays. Today, all hardware from all GPU vendors have this limitation.

Aero Must be Enabled for Windowed SLI AFR Mode Under Vista

Windows 7 Aero must be enabled in order to achieve SLI acceleration using windowed AFR mode.

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.

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 that you restart the application.

Once an application is running, it does 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.

1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors

Even though the monitor EDID lists 1280x1024 @ 60 Hz, the screen turns blank when using an HDMI connection. This is an issue with the monitor and not the NVIDIA driver.

Because of this issue with the monitor, the NVIDIA driver blocks the problem mode (1280x1024 @ 60 Hz) and makes it unavailable.

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.

03 THE RELEASE 325 DRIVER

The notebook driver is part of the NVIDIA Verde Notebook Driver Program, and can be installed on supported NVIDIA notebook GPUs. However, please note that your notebook original equipment manufacturer (OEM) provides certified drivers for your specific notebook on their website. NVIDIA recommends that you check with your notebook OEM about recommended software updates for your notebook. OEMs may not provide technical support for issues that arise from the use of this driver.

This chapter covers the following main topics:

- ▶ “Hardware and Software Support” on page 21
- ▶ “Driver Installation” on page 25

Hardware and Software Support

Supported Operating Systems

The Release 325 driver, version 327.23, has been tested with

- ▶ Microsoft Windows® 8.1, and supports both 32-bit and 64-bit versions.
- ▶ Microsoft Windows® 8, and supports both 32-bit and 64-bit versions.
- ▶ Microsoft Windows® 7, and supports both 32-bit and 64-bit versions.
- ▶ Microsoft Windows® Vista, and supports both 32-bit and 64-bit versions.

Supported NVIDIA Notebook Products

The following tables list the NVIDIA notebook products supported by the Release 325 driver, version 327.23:



Note:

Hybrid Power technology is not supported by this release.

The following Sony VAIO notebooks are supported: Sony VAIO F Series with NVIDIA GeForce 310M, GeForce 315M (All-in-One system), GeForce GT 330M, GeForce GT 425M, GeForce GT 520M, or GeForce GT 540M (All-in-One system). Other Sony VAIO notebooks are not supported at this time (please contact Sony for driver support).

Fujitsu notebooks are not supported by this release (Fujitsu Siemens notebooks are supported).

Table 3.1 Supported NVIDIA NVS and Quadro NVS Notebook GPUs

Quadro Notebook Products
NVS 5400M
NVS 5200M
NVS 5100M
NVS 4200M
NVS 3100M
NVS 2100M
Quadro NVS 320M
Quadro NVS 160M
Quadro NVS 150M
Quadro NVS 140M
Quadro NVS 135M
Quadro NVS 130M

Table 3.2 Supported NVIDIA Quadro M and Quadro FX M GPUs

Consumer Products
Quadro K5000M
Quadro K4000M
Quadro K3000M
Quadro K2000M
Quadro K1000M
Quadro 5010M
Quadro 5000M
Quadro 4000M
Quadro 3000M
Quadro 2000M
Quadro 1000M
Quadro FX 3800M
Quadro FX 3700M
Quadro FX 3600M
Quadro FX 2800M
Quadro FX 2700M
Quadro FX 1800M
Quadro FX 1700M
Quadro FX 1600M
Quadro FX 880M
Quadro FX 770M
Quadro FX 570M
Quadro FX 380M
Quadro FX 370M
Quadro FX 360M

Supported Languages

The Release 325 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 for 32-bit is minimum 295 MB.

The hard disk space requirement for 64-bit is minimum 395 MB.

Before You Begin

nTune

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.

Notebooks

- ▶ Check to make sure that your notebook has a supported GPU (see [""](#) on page 21).
- ▶ It is recommended that you back up your current system configuration.
- ▶ If you own a Dell Inspiron 1420, Dell XPS M1330, or Dell XPS M1530, or Dell LatitudeD630 or D630c, it is highly recommended that you first install this [Dell software update](#).

SLI Mosaic Mode

You must make sure SLI Mosaic mode is disabled before installing a new driver over a previously installed driver. If SLI Mosaic mode is active on your displays when you install the new driver, the driver will not install properly.

Installation Instructions

- 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.
The license agreement dialog box appears.
- 3 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.
- 4 Open the NVIDIA driver installation .EXE file to launch the NVIDIA InstallShield Wizard.

- 5 Follow the instructions in the NVIDIA InstallShield Wizard to complete the installation.



Note: If you are overinstalling the driver (installing over a previous driver without first removing the previous driver), then you must reboot your computer in order to complete the installation.

APPENDIX A MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 325 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 TV Encoders” on page 32

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 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
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz
HP LP3065 dual-link DVI flat panel	2560x1600 @ 60Hz.

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:

- ▶ “Quadro Notebook GPUs” on page 30

Understanding the Mode Format

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

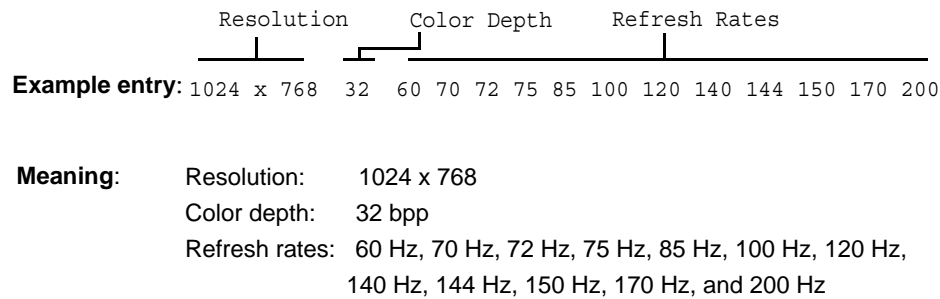


Figure A.1 Mode Format

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.

Quadro Notebook GPUs

This sections lists the supported display resolutions, color depths, and refresh rates for the products listed in [“Supported NVIDIA Notebook Products”](#) on page 22.

Standard Modes

640 x 480	8	60 70 72 75 85 100 120 140 144 150 170 200 240
720 x 480	8	60
720 x 576	8	50
800 x 600	8	60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 768	8	60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 864	8	60 70 72 75 85 100 120 140 144 150 170 200
1280 x 720	8	60
1280 x 768	8	60 70 72 75 85 100 120 140 144 150 170
1280 x 800	8	60 70 72 75 85 100 120 140 144 150 170
1280 x 960	8	60 70 72 75 85 100 120 140 144 150 170
1280 x 1024	8	60 70 72 75 85 100 120 140 144 150 170
1360 x 768	8	60 70 72 75 85 100 120 140 144 150 170
1600 x 900	8	60 70 72 75 85 100 120 140 144 150
1600 x 1024	8	60 70 72 75 85 100 120
1600 x 1200	8	60 70 72 75 85 100 120
1680 x 1050	8	60
1920 x 1080	8	60
1920 x 1200	8	60 70 72 75 85 100
1920 x 1440	8	60 70 72 75 85
2048 x 1536	8	60

640 x 480	16	60 70 72 75 85 100 120 140 144 150 170 200 240
720 x 480	16	60
720 x 576	16	50
800 x 600	16	60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 768	16	60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 864	16	60 70 72 75 85 100 120 140 144 150 170 200
1280 x 720	16	60
1280 x 768	16	60 70 72 75 85 100 120 140 144 150 170
1280 x 800	16	60 70 72 75 85 100 120 140 144 150 170
1280 x 960	16	60 70 72 75 85 100 120 140 144 150 170
1280 x 1024	16	60 70 72 75 85 100 120 140 144 150 170
1360 x 768	16	60 70 72 75 85 100 120 140 144 150 170
1600 x 900	16	60 70 72 75 85 100 120 140 144 150
1600 x 1024	16	60 70 72 75 85 100 120
1600 x 1200	16	60 70 72 75 85 100 120
1680 x 1050	16	60
1920 x 1080	16	60
1920 x 1200	16	60 70 72 75 85 100

```

1920 x 1440 16      60 70 72 75 85
2048 x 1536 16      60
-----
 640 x  480 32      60 70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480 32      60
 720 x  576 32      50
 800 x  600 32      60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x  768 32      60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x  864 32      60 70 72 75 85 100 120 140 144 150 170 200
1280 x  720 32      60
1280 x  768 32      60 70 72 75 85 100 120 140 144 150 170
1280 x  800 32      60 70 72 75 85 100 120 140 144 150 170
1280 x  960 32      60 70 72 75 85 100 120 140 144 150 170
1280 x 1024 32      60 70 72 75 85 100 120 140 144 150 170
1360 x  768 32      60 70 72 75 85 100 120 140 144 150 170
1600 x  900 32      60 70 72 75 85 100 120 140 144 150
1600 x 1024 32      60 70 72 75 85 100 120
1600 x 1200 32      60 70 72 75 85 100 120
1680 x 1050 32      60
1920 x 1080 32      60
1920 x 1200 32      60 70 72 75 85 100
1920 x 1440 32      60 70 72 75 85
2048 x 1536 32      60
-----

```

Modes Supported by TV Encoders

Table A.3 and Table A.4 list the NTSC, PAL, and HDTV TV-Out modes supported by the NVIDIA driver.

Table A.3 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.4 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 8 Series and later GPUs.
480p (EDTV)	
720p (HDTV)	
1080i (HDTV)	
576i (PAL)	
576p (PAL)	

The driver supports manual overscan correction for component and DVI outputs. See the online NVIDIA Control Panel Help for instructions on how to use the overscan correction features.

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