ForceWare Graphics Drivers
Release 169 Notes

Version 169.25

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

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INTRODUCTION TO *RELEASE 169 NOTES*

This edition of *Release 169 Notes* describes the Release 169 ForceWare Graphics Drivers for Microsoft® Windows® Vista. 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 169 Driver Changes" on page 3 gives a summary of changes, and fixed and open issues in this version.

- "The Release 169 Driver" on page 25 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 31 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release 169 Notes* for Windows Vista includes information about NVIDIA ForceWare graphics driver version 169.25, and lists changes made to the driver since version 163.75. These changes are discussed beginning with the chapter "Release 169 Driver Changes" on page 3.

C H A P T E R

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RELEASE 169 DRIVER CHANGES

This chapter describes open issues for version 169.25, and resolved issues and driver enhancements for versions of the Release 169 driver up to version 169.25. The chapter contains these sections:

Version 169.25 Highlights

This section provides highlights of version 169.25 of the NVIDIA Release 169 Driver for Windows Vista.

- What's New in Release 169

- What's New in Version 169.25

- Limitations in This Release

What's New in Release 169

- Added support for the NVIDIA GeForce 8800 GT.

- Added product support for GeForce 8800 GTS 512.

- Added product support for GeForce 8400.

- Added support for 3-way NVIDIA SLI$^{\text{TM}}$ technology.

What's New in Version 169.25

Resolved Issues for Windows XP

See "Changes in Version 169.25" on page 5 for a list of resolved issues.

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**

- **NVIDIA SLI Antialiasing**

- **NVIDIA SLI Mode for GeForce 6800 Ultra and GeForce 6800 GT**

- **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 -** 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/adapter/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.

NVIDIA Control Panel Pages that are Not Yet Available

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**

  - Adjust television color settings
  - Adjust screen size and position

Changes in Version 169.25

The following sections list the changes made and issues resolved since driver version 163.75.

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

Fixed Issues–Windows Vista 32-bit

Single GPU Issues

All GPUs
- Blu-ray disc titles over component-out do not play at 576p.[304186]

GeForce 8 Series GPUs
- GeForce 8 Series: The Help topic for Antialiasing inaccurately states to use override when turning off in-game AA. [308859]

  The override option should be used only if your application does not have built-in antialiasing control.

GeForce 7 Series GPUs
- GeForce 7900 GTX: Half-Life 2–performance drops by 50% at resolution 2048x1536 and 1920x1440 compared to 2560x1600.[304298]

- GeForce 7 Series: With TMM enabled, the driver does not detect a hot-plugged VGA (dongle) or DVI connection.[250354 273864]

GeForce 6 Series GPUs
- GeForce 6800: Star Wars Empire at War – the application crashes to the desktop after displaying the logo 'petroglyph' during launch. [344182]

- GeForce 6800: Frame drops occur when playing MPEG2 video files using Windows Media Player 11. [284346/336873]

SLI Mode Issues

GeForce 8 Series GPUs
- [SLI], GeForce 8800 GTX: Everquest2–there is a brief flicker when entering the water with 8xAA enabled. [306973]

- [SLI], GeForce 8600: 3DMark06–the screen goes blank after running all the tests using the default settings, requiring a hard reboot. [348065]

- [SLI], GeForce 8600 GT: Elder Scrolls IV: Oblivion–the game crashes to the desktop when antialiasing is set to 8x (Enhance) from the NVIDIA Control Panel. [308931]

- [SLI], GeForce 8600 GT/GTS: 3D games such as Battlefield 2, Age of Empire 3, Battlefield 2142, Far Cry, and Chronicles of Reddick behave erratically when played while the NVIDIA Control Panel is open.[303662]

- [SLI], GeForce 8600: Warhammer 40k Mark of Chaos–the ground has flickering patches when using SLI mode. [332353]

- [SLI], GeForce 8500/8400/8300: Dungeon Siege 2–the system crashes after enabling SLI and Override AA set to any value (from the NVIDIA Control Panel). [330815]

- [SLI], GeForce 8500/8400/8300: Command & Conquer 3: Tiberium Wars–corruption and flickering occurs in the game after pressing the ESC key. [328823]

- [SLI], GeForce 8500/8400/8300: Elder Scrolls IV: Oblivion–there is flickering and corruption on the player selection screen and in the game. [328013]

GeForce 7 Series GPUs

- [SLI], GeForce 7900 GTX: Gothic 3–the mountain reflections in the water flicker after enabling SLI mode.[340574]

GeForce 6 Series GPUs

- [SLI], GeForce 6600/6200: The "Resize Desktop" tab does not work on the NVIDIA Control Panel->Resize HDTV Desktop page. [349389]

Fixed Issues–Windows Vista 64-bit

- GeForce 7 Series: With TMM enabled, the driver does not detect a hot-plugged VGA (dongle) or DVI connection.[250354 273864]

- GeForce 7800 GTX: "Display Driver is not responding " messages appear when playing HD files using WinDVD with hardware accelerator enabled. [309218/ 319789]

Open Issues in Version 169.25

As with every released driver, version 169.25 of the Release 169 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 32-bit Issues" on page 11
- "Windows Vista 64-bit Issues" on page 14

Windows Vista 32-bit Issues

Single GPU Issues

All GPUs

- The graphics driver installer sometimes displays an 'incorrect operating system' error message when trying to install on a GPU that not supported by the driver. [310188]

GeForce 8 Series GPUs

- GeForce 8800 GTX/Ultra: OpenGL applications experience a drop in performance with in-game 8x antialiasing set.

- GeForce 8800 GTX: The incorrect image is shown for standard settings on the NVIDIA Control Panel "Resize HDTV Desktop" page. [327187]

- GeForce 8800 GT, 8600 GT/GTS, 6800: Gray border does not appear after selecting the gray border option from the NVIDIA Control Panel Adjust Television Color Setting page. [369228]

- GeForce 8800 GT/GTX: Crysis (DirectX 10) - game performance drops after switching to a higher resolution and then switching back to the lower resolution. [368740]

- GeForce 8800 GT: Unreal Tournament 3–the game freezes at the Gateway map [373530]

- GeForce 8800 GTX: Battlefield2–the desktop doesn't refresh when exiting the game at 2048x1536 with 8xAA enabled. [293351]

- GeForce 8800 GTX: Tabula Rasa–there is ghosting on the game character while standing below the drop ship after enabling refraction from the game control panel. [357271]

- GeForce 8800 GTX: Company of Heroes (DirectX 10)–the game crashes while loading the performance test at 2560x1600 resolution with all settings at medium. [354041]

- GeForce 8600: HD resolutions higher than 720p are not available.[308627]

- GeForce 8600: Tiger Woods PGA Tour 2007–the game hangs with the default settings while loading the screen [333405].

- GeForce 8600: Serious Sam 2–performance drop at 1280x1024 with HDR and antialiasing enabled. [340691]

GeForce 7 Series GPUs

- Dual GeForce 7950 GX2: NVIDIA Control Panel menu item does not appear in the context menu when right-clicking the desktop.[304844]

- GeForce 7300 LE: Battlefield 2–the intro video flickers when the in-game resolution is set to 1280x960, antialiasing is set to 4x, and Lighting is set to High. [319585]

GeForce 6 Series GPUs

- GeForce 6600: TV signal formats based on country cannot be set from the NVIDIA Control Panel->Change signal or HD format page. [373501]

- GeForce 6600: The Elder Scrolls 4:Oblivion – the display turns blank when the game is played at 1920x1200 resolution.[289525]

- GeForce 6600: Stars Wars Battlefront2–blue-screen crash occurs when High settings are used.[302213]

- GeForce 6600 GT: Dungeon Siege 2–the game hangs at the loading screen at 1280x1024 resolution with 8x antialiasing enabled from the NVIDIA Control Panel. [353888]

- GeForce 6200: Call of Juarez–there is corruption at all resolutions. [356711]

SLI Mode Issues

GeForce 8 Series GPUs

- [3xSLI], GeForce 8800 GTX/Ultra: Blue-screen crash occurs during the driver setup if 2-way SLI mode is enabled before inserting the third video card. [374888]

  When upgrading from 2-way SLI to 3-way SLI mode, NVIDIA recommends the folowing steps:

  1 *From the NVIDIA Control Panel, set the SLI Configuration to Single-GPU mode.*

  2 *Install the third GPU.*

  3 *Install the 3-way SLI driver and then set the SLI Configuration to 3-way SLI mode.*

- [3xSLI]. GeForce 8800 GTX/Ultra: 3-way SLI mode doesn't work correctly after switching from 2-way SLI mode. [364501]

  When upgrading from 2-way SLI to 3-way SLI mode, NVIDIA recommends the folowing steps:

  1 *From the NVIDIA Control Panel, set the SLI Configuration to Single-GPU mode.*

  2 *Install the third GPU.*

3 *Install the 3-way SLI driver and then set the SLI Configuration to 3-way SLI mode.*

- [3xSLI], GeForce 8800 GTX/Ultra: Installing the driver on a 3-way SLI system takes a minimum of 3–4 minutes, and possibly longer if drivers have been previously installed on the system. [354847]

  The installation does complete in time–NVIDIA recommends that you do not interrupt the installation process, but wait for it to complete.

- [3xSLI], GeForce 8800 GTX/Ultra: After changing the SLI Performance mode, the user cannot restore the default 3-way SLI application profile. [374346]

  To recover the 3-way SLI settings for relevant application profiles, you must reinstall the driver.

- [3xSLI], GeForce 8800 GTX/Ultra: The NVIDIA Control Panel mislabels games with SLI profiles as "Single GPU". [374143]

- [SLI], GeForce 8800 GT: After enabling or disabling SLI mode, the Resize Desktop page does not open after clicking "Resize my desktop" from the NVIDIA Control Panel Resize HDTV Desktop page. [369626]

- [SLI], GeForce 8 series: Company of Heroes–performance is more choppy with SLI mode than with single-GPU mode. [334068]

- [SLI], GeForce 8 Series, GeForce 7 Series: Everquest2–part of the desktop is visible during the intro movie when the game resolution is the same as the desktop resolution. [297754]

- [SLI], GeForce 8800 GTX: Hellgate: London (DirectX 10)–sporadic frame corruption occurs with SLI mode enabled. [373823]

- [SLI], GeForce 8800 GTX: FEAR–there is horizontal flickering during the intro video with SLI mode enabled. [372704]

- [SLI], GeForce 8800 GTX: When SLI mode is enabled, the NVIDIA Control panel lists the same display twice. [291140]

- [SLI], GeForce 8800 GTX: Test Drive Unlimited–the intro cut scene pauses during transitions when SLI mode is enabled. [301655]

GeForce 7 Series GPUs

- [SLI], GeForce 7900 GT: Need For Speed Prostreet–there is horizontal flickering throughout the game at 1280x1024x60Hz with 8xAA and SLI mode enabled. [374724]

GeForce 6 Series GPUs

- [SLI], GeForce 6600 GT: Colin McRae Dirt–the system hangs during gameplay at 1024x768 resolution with in-game 4x antialiasing enabled. [354656]

Windows Vista 64-bit Issues

Single GPU Issues

- GeForce 8800 GTX, NVIDIA Control Panel: The user is unable to select Resize my Desktop while playing an HD DVD. [357674]

- GeForce 8800 GT/GTX: Crysis (DirectX 10) - game performance drops after switching to a higher resolution and then switching back to the lower resolution. [368740]

- GeForce 8800 GTX: Battlefield2–the desktop doesn't refresh when exiting the game at 2048x1536 with 8xAA enabled. [293351]

- GeForce 8800 GT: Unreal Tournament 2 - the game freezes at the Gateway map [373592]

- GeForce 8600: F.E.A.R.–after loading or saving a game, the performance drops for 5—10 seconds before returning to normal. [340874]

- GeForce 8600: Serious Sam 2–performance drop at 1280x1024 with HDR and antialiasing enabled. [340691]

- GeForce 7050 PV/7025: The NVIDIA Control Panel shows " TV" when HDTV is connected by component cable. [353852]

SLI Mode Issues

- [3xSLI], GeForce 8800 GTX/Ultra: Blue-screen crash occurs during the driver setup if 2-way SLI mode is enabled before inserting the third video card. [374888]

  When upgrading from 2-way SLI to 3-way SLI mode, NVIDIA recommends the folowing steps:

  1 *From the NVIDIA Control Panel, set the SLI Configuration to Single-GPU mode.*

  2 *Install the third GPU.*

  3 *Install the 3-way SLI driver and then set the SLI Configuration to 3-way SLI mode.*

- [3xSLI], GeForce 8800 GTX/Ultra: Frame drops occur during HD-DVD video playback in the PIP window using PowerDVD. [356445]

- [3xSLI], GeForce 8800 GTX/Ultra: The system hangs when trying to enable HDCP while the display is underscanned [356373]

- [3xSLI], GeForce 8800 GTX/Ultra: Half-Life: Episode 2 - there are flickering shadows after switching resolutions. [353309]

- [SLI], GeForce 7900 GTX, NVIDIA Control Panel: The "Resize HDTV Desktop" link disappears. [356761]

- [SLI], GeForce 7900 GT: Need For Speed Prostreet - there is horizontal flickering throughout the game at 1280x1024x60Hz with 8xAA and SLI mode enabled. [374724]

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

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

- **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.**

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**

- **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.

• **Video & Television Category**

  • Run television setup wizard

• **NVIDIA nView Desktop Manager**

The nView Desktop Manager will not be included in drivers for GeForce products.

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

- Tiger Woods PGA Tour 2007–Fly-by shot before each hole blacks-out textures. [274697]

  NVIDIA is working with the developer to resolve this issue.

- City of Heroes–The mouse cursor does not display. [259256]

  This is an application issue that can be worked around in full-screen mode by adding "compatiblecursors 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. [272477]

  This occurs because of an incorrect driver version check in the application.

  NVIDIA has worked around this issue in the operating system by changing the way the driver version is reported to this application.

- Warhammer 40k Dawn of War (all versions) does not run with Release 100 drivers. [273154]

  This occurs because of an incorrect driver version check in the application.

  NVIDIA has worked around this issue in the operating system by changing the way the driver version is reported to this application.

- Need for Speed Carbon–After upgrading with patch 1.3, the game crashes when launched. [290506]

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

- Nascar Simracing–the game crashes when launched. [270792]

  This is an issue with the application under Windows Vista.

- Call of Duty 2–Only solid colors render during game play when 4xAA is enabled. [257454]

  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. [258036]

- Flight Simulator X–pressing Alt+Tab to switch to the desktop does not work. [293729]

- Everquest 2– with NVIDIA driver versions 100.xx, the following error message appears: [273346]

  "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 game play. 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.

- GeForce 8800 GT: Company of Heroes DirectX10 - the application crashes when MSAA is enabled. [346495]

This is a Fraps 2.9.2 issue.

- GeForce 8 Series: Quake 4–there are white flashing artifacts. [273476]

- GeForce 8800: City of Heroes–there are corrupted textures in certain missions.[290659]

This has been fixed with the latest patch for the game.

- GeForce 8800: Ghost Recon - Advanced Warfighter–the gadget side bar bleeds through on the right side of the screen during game play. [281304]

- GeForce 8800 GTX: Star Wars Battle front 2–screen corruption occurs at 2560x1600 resolution. [325457]

- GeForce 8800 GTX, GeForce 7900 GTX: Neverwinter Nights 2–the mini map loses its background when the resolution is changed. [273788]

- GeForce 8800 GTX: Civilization 4–setting in-game 16x antialiasing AA disables all antialiasing.[303283]

- GeForce 8800 GTX: Flight Simulator–the terrain changes to low resolution when switching from Air Traffic-controlled to player-controlled airplane.[304840]

- GeForce 8800 GTX: Scarface–corruption during the game.[290007]

- GeForce 8800 GTX: Neverwinter Nights 2–only overlays render when switching to 2560x1600 using 8xAA. [302061, 314148]

- GeForce 8800 GTX: Command & Conquer:Tiberium Wars–the game crashes at 2560x1600 resolution, with 8x antialiasing enabled, and when in-game settings are set to the highest levels. [308248]

- GeForce 7900: Flight Simulator X – rendering becomes corrupted after pressing the Windows key.   [293727 296232]

- GeForce 7600: Rainbow Six Vegas – antialiasing is not applied when setting antialiasing override mode in the NVIDIA Control Panel. [294215]

Antialiasing is supported in this application only on GeForce 8 series and higher GPUs.

- GeForce 8500/8400/8300: Corruption occurs while running MicroSoft SDK Basic HLSL sample application. [302209]

- GeForce 8500/8400/8300: Dark Messiah of Might and Magic–an application error occurs when quitting the game. [300980]

This is an issue with the application.

- GeForce 8500/8400/8300: Elder Scrolls IV: Oblivion–the game crashes after restoring from minimization. [296725]

- GeForce 7900 GTX: CPU usage is extremely high during H.264 playback of Blu-ray disc, resulting in dropped frames. [304480]

- GeForce 7300GS: Rainbow Six Vegas–the display turns black at 1600x1200 resolution.[302319]

- GeForce 7300 GT: Far Cry–geometry is corrupted during rendering of blood.[304348]

- GeForce 7300 GT: Company Of Heroes–the shadows are corrupt at the default game settings with SLI mode enabled. [346746]

  This is an issue with the application.

- 322008 GeForce 8600 GT: Battlefield 2–the game crashes to desktop when set to 1900x1440 resolution 8x antialiasing.

  This problem occurs only when you have FRAPS 2.6.4 installed. It does not occur with FRAPS 2.8.2

- 316403 GeForce 8 Series, GeForce 7 Series: NV SDK 9.5 *Mandelbrot* set fails to render fractal.

  This is an issue with the NV SDK and will be fixed in a newer build.

- GeForce 8 Series: Prince of Persia–half the screen turns black and the other half turns white during resolution changes. [299484]

  This is an issue with the application.

- GeForce 8800 GTX: Company of Heroes (DirectX 10)–the game crashes when the maximum settings are applied at 2560x1600 with 8xAA enabled. [321631]

  This is an issue with the application.

- GeForce 7950 GX2: Flight SimX – water has artifacts. [292168]

- GeForce 6100/6150: Gothic–there is flickering with a white screen when using the default settings.[303552]

- GeForce 6200: Star Wars Empire at War–the game menu buttons are corrupt. [357713]

Application Issues Under SLI Mode

- [SLI]: NVIDIA SLI scaling on some applications under Windows Vista may not be as much as under Windows XP. Some applications include "S.T.A.L.K.E.R., Half-Life 2: Lost Coast, Company of Heroes, Battlefield 2142, Call of Duty 2, Hitman: Blood Money, and Far Cry. [302534 290803]

  This is an application issue which has been resolved with the latest Steam patch.

- [SLI], GeForce 8800 GTX, GeForce 8600, GeForce 6 Series: Company of Heroes–there is corruption in the ground textures. [294118]

This is an application issue, and has been fixed with the latest patch for the game.

- [SLI], GeForce 8800 GTX: Battlefield 2 and Battlefield 2142–the games crash when exiting back to the menu after being played at 2048x1536 using 8xAA or higher. [301985]

This is an issue with the application.

- [SLI], GeForce 7900 GTX: Chess Titans–with Aero-glass enabled, there is blanking when resizing the game window. [346775]

This is an issue with the application.

- [SLI], GeForce 8800: While uninstalling driver the driver, the error message "Windows host process (Rundll32) has stopped working" appears. [294219 280920]

- [SLI], GeForce 8800: Splinter Cell Double Agent – the game crashes when minimized and then invoked again. [294205]

- [SLI], GeForce 8800: Battlefield 2142 – 8xAA cannot be set from the game control panel.[294231]

- [SLI], GeForce 7900:Microsoft Flight simulator X – corruption and flickering occur while flying close to land objects. [293882]

Operating System Issues

- World of Warcraft – there is a 60% drop in performance when running the game in windowed mode with SLI or multi-GPU mode enabled. [289427]

  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.

- GeForce 8800 GTS 320MB: The driver reports incorrect video memory (256 MB) in the Windows Vista Display Properties panel. [290811]

  However, the NVIDIA Control Panel properly reports the dedicated video memory as 320 MB.

- GeForce 8800 GTX, GeForce 7900 GTX: Company of Heroes crashes when trying to load the Cherbourg level.[284273]

  This is an issue with the operating system. A QFE (software patch) from Microsoft is being worked on to fix this issue.

- GeForce 7300 GT: Windows Vista desktop gadgets are blank (only outline visible) after changing the primary display while playing an HD DVD or Blu-ray disc.[303482]

  This is an issue with the operating system.

- GeForce 6200: Foxbear–there is corruption on the Dualview secondary display.[302709]

  This is an issue with the operating system.

- [SLI], GeForce 8800 GTX: While installing the graphics driver, the message "Incompatible display adapter has been disabled" appears and the display turns blank. [318173]

  This is an issue with the operating system.

- When S-video and DVI displays are set up in Clone mode and rotated 90 degrees, the screen turns black.[304267, 283546]

  This is an issue with the operating system.

- GeForce 8800 GTX: DreamScene–running the application results in a "Display driver has stopped responding" error message. [295017]

  This is an issue with the OS.

- GeForce 8300 GS: With Aero-glass enabled, the screen flickers after rotating the display 90 degrees with S-Video as the primary display. [317347]

  This is an issue with the OS.

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:

GeForce 6 and 7 Series Cards Cannot Output Interlaced Signals in SLI Mode

- **Problem**

  Rendering problems and instability occur when outputting interlaced modes (480i, 576i and 1080i) over the Y Pr Pb component and DVI outputs.

- **Explanation**

  This is a hardware limitation in SLI mode only and cannot be fixed via a driver update.

- **Resolution**

  Due to this issue, starting in driver version 162.22 in Windows Vista, the driver will automatically disable SLI mode when using the 480i, 576i and 1080i modes over all connectors on the GeForce 6 and 7 series GPUs.

  To re-enable SLI mode, you must choose a non-interlaced output mode and reboot your computer.

  - GeForce 8 series GPUs do not have this hardware limitation and you can output all HDTV interlaced and progressive scan outputs in SLI mode.

  - The 480p, 576p, 720p, and 1080p progressive scan modes do not have this issue in SLI mode and are not affected by this change.

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.

3

THE RELEASE 169 DRIVER

This chapter covers the following main topics:

Hardware and Software Support

Supported Operating Systems

The Release 169 driver, version 169.25, 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 169 driver, version169.25

Table 3.1   Supported NVIDIA Products

Consumer Products
GeForce 8800 Ultra
GeForce 8800 GTX
GeForce 8800 GTS 512
GeForce 8800 GTS
GeForce 8800 GT
GeForce 8600 GTS
GeForce 8600 GT
GeForce 8600 GS
GeForce 8500 GT
GeForce 8400 GS
GeForce 8400 SE
GeForce 8400
GeForce 8300 GS
GeForce 7950 GX2
GeForce 7950 GT
GeForce 7900 GTX
GeForce 7900 GT/GTO
GeForce 7900 GS
GeForce 7800 SLI
GeForce 7800 GTX
GeForce 7800 GT
GeForce 7800 GS
GeForce 7650 GS
GeForce 7600 GT
GeForce 7600 GS
GeForce 7600 LE
GeForce 7500 LE
GeForce 7350 LE
GeForce 7300 SE
GeForce 7300 LE
GeForce 7300 GT
GeForce 7300 GS
GeForce 7200 GS
GeForce 7100 GS
GeForce 7150 / NVIDIA nForce 630i
GeForce 7100 / NVIDIA nForce 630i
GeForce 7050 / NVIDIA nForce 620i
GeForce 7050 / NVIDIA nForce 610i
GeForce 7100 / NVIDIA nForce 620i
GeForce 7050 PV / NVIDIA nForce 630a
GeForce 7050 PV / NVIDIA nForce 630a

Table 3.1   Supported NVIDIA Products

Consumer Products
GeForce 7025 / NVIDIA nForce 630a
GeForce 6800 XT
GeForce 6800 XE
GeForce 6800 Ultra
GeForce 6800 Series GPU
GeForce 6800 LE
GeForce 6800 GT
GeForce 6800 GS/XT
GeForce 6800 GS
GeForce 6800
GeForce 6700 XL
GeForce 6610 XL
GeForce 6600 VE
GeForce 6600 LE
GeForce 6600 GT
GeForce 6600
GeForce 6500
GeForce 6250
GeForce 6200SE TurboCache™
GeForce 6200 TurboCache™
GeForce 6200 LE
GeForce 6200 A-LE
GeForce 6200
GeForce 6150SE nForce 430
GeForce 6150 LE
GeForce 6150
GeForce 6100 nForce 420
GeForce 6100 nForce 405
GeForce 6100 nForce 400
GeForce 6100

Supported Languages

The Release 169 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.

Before You Begin

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

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

Release 169 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 169: Version 169.02, 169.04, 169.09, 169.12, 169.13, 169.21, 169.25
RTM OS Builds 6000 or higher	Release 167: Version 167.35
RTM OS Builds 6000 or higher	Release 163: Version 163.11, 163.44, 163.67, 163.69, 163.71, 163.75
RTM OS Builds 6000 or higher	Release 162: Version 162.22
RTM OS Builds 6000 or higher	Release 158: Version 158.14, 158.18, 158.24, 158.42, 158.43, 158.45
RTM OS Builds 6000 or higher	Release 100: Version 100.53, 100.54, 100.59, 100.64, 100.65, 101.41
	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

M ODE S UPPORT FOR W INDOWS

This chapter details the Windows modes supported by the Release 169 driver for NVIDIA products. It contains these sections:

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 33.

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	• All high-end NVIDIA Quadro FX graphic solutions. • All GeForce 8 Series GPUs • All GeForce 7 series GPUs • GeForce 6800 Ultra 512 • GeForce 6800 with 512 MB
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	• All High-end NVIDIA Quadro FX graphic solutions. • All GeForce 8 Series GPUs • All GeForce 7 series GPUs • GeForce 6800 Ultra 512 • GeForce 6800 with 512 MB

Table A.2   Non-standard Modes Supported
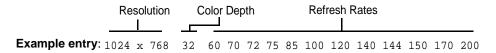
Resolution
1680 x 1050
1366 x 768

Default Modes Supported by GPU

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

Understanding the Mode Format

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

	Resolution	Color Depth	Refresh Rates

Example entry: 1024 x 768   32   60 70 72 75 85 100 120 140 144 150 170 200

Meaning:
Resolution:	1024 x 768
Color depth:	32 bpp
Refresh rates:	60 Hz, 70 Hz, 72 Hz, 75 Hz, 85 Hz, 100 Hz, 120 Hz, 140 Hz, 144 Hz, 150 Hz, 170 Hz, and 200 Hz

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.

GeForce 7 Series and GeForce 6 Series GPUs

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

- GeForce 7950 GX2 / GT
- GeForce 7900 GTX / GT / GTO / GS
- GeForce 7800 SLI
- GeForce 7800 GTX / GT / GS
- GeForce 7650 GS
- GeForce 7600 GT / GS / LE
- GeForce 7500 LE
- GeForce 7350 LE
- GeForce 7300 SE / LE / GT / GS
- GeForce 7200 GS
- GeForce 7100 GS
- GeForce 7050 PV / NVIDIA nForce 630a
- GeForce 7050 PV / NVIDIA nForce 630a
- GeForce 7025 / NVIDIA nForce 630a
- GeForce 6800 XT / XE / Ultra / LE / GT/ GS
- GeForce 6700 XL
- GeForce 6610 XL
- GeForce 6600 VE / LE / GT
- GeForce 6500
- GeForce 6250
- GeForce 6200SE TurboCache™
- GeForce 6200 TurboCache™
- GeForce 6200 LE
- GeForce 6200 A-LE
- GeForce 6200
- GeForce 6150SE nForce 430
- GeForce 6150 LE

- GeForce 6150
- GeForce 6100 nForce 420
- GeForce 6100 nForce 405
- GeForce 6100 nForce 400
- GeForce 6100

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 60
 800 x  600   8              60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480   8              60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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 70 72 75 85 100 120 140 144 150 170
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
1440 x  900   8              60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900   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    30i       60 70 72 75 85 100
1920 x 1200   8              60 70 72 75 85 100
1920 x 1440   8              60 70 72 75 85
2048 x 1536   8              60 70 72 75 85
-----------------------------------------------------------------
 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 60
 800 x  600  16              60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  16              60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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 70 72 75 85 100 120 140 144 150 170
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
1440 x  900  16              60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  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    30i       60 70 72 75 85 100
1920 x 1200  16              60 70 72 75 85 100
1920 x 1440  16              60 70 72 75 85
2048 x 1536  16              60 70 72 75 85
----------------------------------------------------------------
 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 60
 800 x  600  32              60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  32              60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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
1152 x  864  32              60 70 72 75 85 100 120 140 144 150 170 200
1280 x  720  32              60 70 72 75 85 100 120 140 144 150
1280 x  768  32              60 70 72 75 85 100 120 140 144 150
1280 x  800  32              60 70 72 75 85 100 120 140 144 150
1280 x  960  32              60 70 72 75 85 100 120 140 144 150
1280 x 1024  32              60 70 72 75 85 100 120 140 144 150
1360 x  768  32              60 70 72 75 85 100 120 140 144 150
1440 x  900  32              60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  32              60 70 72 75 85 100
1600 x 1200  32              60 70 72 75 85 100
1680 x 1050  32              60
1920 x 1080  32    30i       60 70 72 75 85
1920 x 1200  32              60 70 72 75 85
1920 x 1440  32              60 70 72 75 85
2048 x 1536  32              60 70 72 75 85
```

GeForce 8800 GTX/GTS/Ultra and GeForce 8400

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

- NVIDIA GeForce 8800 GTX

- NVIDIA GeForce 8800 GTS

- NVIDIA GeForce 8800 Ultra

- NVIDIA GeForce 8400

Standard Modes

```
 640 x  480   8              60     72 75 85 100
 720 x  480   8              60
 720 x  576   8        50 60
 800 x  600   8              60     72 75 85 100
1024 x  768   8              60     72 75 85 100
1152 x  864   8              60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768   8              60     72 75 85 100
1280 x 1024   8              60     72 75 85 100
1440 x  900   8              60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900   8              60     72 75 85 100
1600 x 1200   8              60     72 75 85 100
1680 x 1050   8              60
1920 x 1080   8    30i
1920 x 1200   8              60     72 75 85 100
1920 x 1440   8              60     72 75 85
2048 x 1536   8              60     72 75
-----------------------------------------------------------------
 640 x  480  16              60     72 75 85 100
 720 x  480  16              60
 720 x  576  16        50 60
 800 x  600  16              60     72 75 85 100
1024 x  768  16              60     72 75 85 100
1152 x  864  16              60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  16              60     72 75 85 100
1280 x 1024  16              60     72 75 85 100
1440 x  900  16              60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  16              60     72 75 85 100
1600 x 1200  16              60     72 75 85 100
```

```
1680 x 1050  16           60
1920 x 1080  16    30i
1920 x 1200  16           60    72 75 85 100
1920 x 1440  16           60    72 75 85
2048 x 1536  16           60    72 75
----------------------------------------------------------------
 640 x  480  32           60    72 75 85 100
 720 x  480  32           60
 720 x  576  32        50 60
 800 x  600  32           60    72 75 85 100
1024 x  768  32           60    72 75 85 100
1152 x  864  32           60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  32           60    72 75 85 100
1280 x 1024  32           60    72 75 85 100
1440 x  900  32           60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  32           60    72 75 85 100
1600 x 1200  32           60    72 75 85 100
1680 x 1050  32           60
1920 x 1080  32    30i
1920 x 1200  32           60    72 75 85
1920 x 1440  32           60        75
2048 x 1536  32           60
----------------------------------------------------------------
 640 x  480  64           60    72 75 85 100
 720 x  480  64           60
 720 x  576  64        50 60
 800 x  600  64           60    72 75 85 100
1024 x  768  64           60    72 75 85 100
1152 x  864  64           60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  64           60    72 75 85 100
1280 x 1024  64           60    72 75 85 100
1440 x  900  64           60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  64           60    72 75 85 100
1600 x 1200  64           60    72 75 85 100
1680 x 1050  64           60
1920 x 1080  64    30i
```

GeForce 8 Series

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

- NVIDIA GeForce 8800 GT
- NVIDIA GeForce 8800 GT 512
- NVIDIA GeForce 8600 GTS
- NVIDIA GeForce 8600 GT
- NVIDIA GeForce 8600 GS
- NVIDIA GeForce 8500 GT
- NVIDIA GeForce 8400 GS
- NVIDIA GeForce 8400 SE
- NVIDIA GeForce 8500 GT
- NVIDIA GeForce 8400 GS
- NVIDIA GeForce 8300 GS

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 60
 800 x  600   8          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480   8          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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 70 72 75 85 100 120 140 144 150 170
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
1440 x  900   8          60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900   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    30i   60 70 72 75 85 100
```

```
1920 x 1200   8           60 70 72 75 85 100
1920 x 1440   8           60 70 72 75 85
2048 x 1536   8           60 70 72 75 85
------------------------------------------------------------------
 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 60
 800 x  600  16           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  16           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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 70 72 75 85 100 120 140 144 150 170
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
1440 x  900  16           60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  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    30i    60 70 72 75 85 100
1920 x 1200  16           60 70 72 75 85 100
1920 x 1440  16           60 70 72 75 85
2048 x 1536  16           60 70 72 75 85
------------------------------------------------------------------
 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 60
 800 x  600  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 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
1152 x  864  32           60 70 72 75 85 100 120 140 144 150 170 200
1280 x  720  32           60 70 72 75 85 100 120 140 144 150
1280 x  768  32           60 70 72 75 85 100 120 140 144 150
1280 x  800  32           60 70 72 75 85 100 120 140 144 150
1280 x  960  32           60 70 72 75 85 100 120 140 144 150
```

```
1280 x 1024  32          60 70 72 75 85 100 120 140 144 150
1360 x  768  32          60 70 72 75 85 100 120 140 144 150
1440 x  900  32          60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  32          60 70 72 75 85 100
1600 x 1200  32          60 70 72 75 85 100
1680 x 1050  32          60
1920 x 1080  32    30i   60 70 72 75 85
1920 x 1200  32          60 70 72 75 85
1920 x 1440  32          60 70 72 75 85
2048 x 1536  32          60 70 72 75 85
------------------------------------------------------------------
 640 x  480  64          60 70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480  64          60
 720 x  576  64       50 60
 800 x  600  64          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  64          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600  64          60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x  768  64          60    72 75 85 100
1152 x  864  64          60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  64          60    72 75 85 100
1280 x 1024  64          60    72 75 85 100
1440 x  900  64          60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  64          60    72 75 85 100
1600 x 1200  64          60    72 75 85 100
1680 x 1050  64          60
1920 x 1080  64    30i
1920 x 1200  64             70
1920 x 1440  64          60 70 72 75 85
2048 x 1536  64          60 70 72 75 85
```

GeForce 7050/7100/7150

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

- NVIDIA GeForce 7150 / NVIDIA nForce 630i
- NVIDIA GeForce 7100 / NVIDIA nForce 630i
- NVIDIA GeForce 7050 / NVIDIA nForce 630i
- NVIDIA GeForce 7050 / NVIDIA nForce 610i
- NVIDIA GeForce 7100 / NVIDIA nForce 620i

Standard Modes

```
 640 x  480   8       60    72 75 85 100
 720 x  480   8       60
 720 x  576   8       60
 800 x  600   8       60    72 75 85 100
1024 x  768   8       60    72 75 85 100
1152 x  864   8       60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768   8       60    72 75 85 100
1280 x 1024   8       60    72 75 85 100
1440 x  900   8       60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900   8       60    72 75 85 100
1600 x 1200   8       60    72 75 85 100
1680 x 1050   8       60
1920 x 1080   8   30i
1920 x 1200   8       60    72 75 85 100
1920 x 1440   8       60    72 75 85
2048 x 1536   8       60    72 75
--------------------------------------------------------------
 640 x  480  16       60    72 75 85 100
 720 x  480  16       60
 720 x  576  16       60
 800 x  600  16       60    72 75 85 100
1024 x  768  16       60    72 75 85 100
1152 x  864  16       60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  16       60    72 75 85 100
1280 x 1024  16       60    72 75 85 100
1440 x  900  16       60 70 72 75 85 100 120 140 144 150 170 200
```

```
1600 x  900  16       60    72 75 85 100
1600 x 1200  16       60    72 75 85 100
1680 x 1050  16       60
1920 x 1080  16  30i
1920 x 1200  16       60    72 75 85 100
1920 x 1440  16       60    72 75 85
2048 x 1536  16       60    72 75
-----------------------------------------------------------------
 640 x  480  32       60    72 75 85 100
 720 x  480  32       60
 720 x  576  32       60
 800 x  600  32       60    72 75 85 100
1024 x  768  32       60    72 75 85 100
1152 x  864  32       60 70 72 75 85 100 120 140 144 150 170 200
1280 x  768  32       60    72 75 85 100
1280 x 1024  32       60    72 75 85 100
1440 x  900  32       60 70 72 75 85 100 120 140 144 150 170 200
1600 x  900  32       60    72 75 85 100
1600 x 1200  32       60    72 75 85 100
1680 x 1050  32       60
1920 x 1080  32  30i
1920 x 1200  32       60    72 75 85
1920 x 1440  32       60       75
2048 x 1536  32       60
```

Modes Supported by DACs and TV Encoders

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

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