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This edition of *Release Notes* describes the Release 337 family of graphics drivers (versions 337.xx to 339.xx) for Microsoft® Windows® Vista and later. 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 337 Driver Changes” on page 1 gives a summary of changes, and fixed and open issues in this version.
- “The Release 337 Driver” on page 27 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 35 lists the default resolutions supported by the driver.

**Changes in this Edition**

This edition of the *Release Notes* for Windows Vista and later includes information about NVIDIA graphics driver version 337.91, and lists changes made to the driver since the Release 334 driver version 335.23. These changes are discussed beginning with the chapter “Release 337 Driver Changes” on page 1.

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1. Includes Windows Vista, Windows 7, Windows 8, and Windows 8.1
01 RELEASE 337 DRIVER CHANGES

This chapter describes open issues for version 337.91, and resolved issues and driver enhancements for versions of the Release 337 driver up to version 337.91.

The chapter contains these sections:
- “Version 337.91 Highlights” on page 1’
- “Changes and Fixed Issues in Version 337.88” on page 1
- “Changes and Fixed Issues in Version 337.50” on page 1
- “Open Issues in Version Version 337.91” on page 1
- “Not NVIDIA Issues” on page 5
- “Known Product Limitations” on page 14

Version 337.91 Highlights

This section provides highlights of version Version 337.91 of the NVIDIA Release 337 Driver for Windows Vista/Windows 7/Windows 8/Windows 8.1.
- What’s New in Version 337.91
- What’s New in Release 337
- Limitations in This Release
- Advanced Driver Information
What’s New in Version 337.91

This 337.91 WHQL driver is the first driver to provide support for the GeForce GTX Titan Z.

See also “What’s New in Release 337” on page 3.

Software Modules

► NVIDIA PhysX System Software - version 9.13.1220
  
  NVIDIA GPU PhysX acceleration is available only on systems with GeForce 8-series and later GPUs with a minimum of 256 MB dedicated graphics memory.
  
  NVIDIA GPU PhysX acceleration is not available if there is a non-NVIDIA graphics processor in the system, even if it is not used for rendering.

► HD Audio Driver - version 1.3.30.1

► GeForce Experience - 14.6.6.0

Performance

Introduces key DirectX optimizations which result in reduced game-loading times and significant performance increases across a wide variety of games. Results will vary depending on your GPU and system configuration.

Product Support

Added support for the GeForce GTX TITAN Z.

Gaming

► Supports GeForce ShadowPlay™ technology

► Supports GeForce ShadowPlay™ Twitch Streaming

► Supports NVIDIA GameStream™ technology for NVIDIA SHIELD™
What’s New in Release 337

The section summarizes the driver changes in Release 337, including previous Release 337 drivers:

Performance Boost

Introduces key DirectX optimizations which result in reduced game-loading times and significant performance increases across a wide variety of games. Results will vary depending on your GPU and system configuration.

4K Display Support

Added support for single-tile 4kx2k @ 60 Hz displays using bridgeless SLI cards.

NVIDIA Control Panel

Shader Cache: 3D Settings->Manage 3D Settings Page

Added Shader Cache setting to reduce CPU usage by saving compiled shaders to a disk cache. This may improve performance and reduce the time it takes for a game to load.

NVIDIA SLI Technology

Added or updated the following profiles:
- Battlefield 4 - added EXE names to support CTE version;
- Bound By Flame - corrected EXE name;
- Call of Duty Online - added SLI profile, disabled CPL AA;
- Dark Souls II - added SLI, AA profiles;
- Daylight - added SLI profile;
- DayZ - disabled NVIDIA Control Panel AA
- Diablo III - updated profile
- EverQuest Next Landmark - updated EXE names
- Icarus - added SLI profile;
- Planetside 2 - added EXE names
- Smite - added DirectX 11 SLI profile;
- Sniper Elite 3 - added SLI profile;
- Total War: Rome II - added profile
- Trials Fusion - disabled SLI
- War Thunder - added profile
- Watch Dogs - updated profile
• Wildstar - *added SLI profile*;
• Windborne - *added SLI profile*
• World of Tanks - *updated SLI profile*.

3D Vision Profile Updates

• Assassin's Creed: Freedom Cry - *Not Recommended*
• CoD Online - *Good*
• Dark Souls II - *Good*
• DayZ - *Good*
• Goat Simulator - *Excellent*
• Halo: Spartan Assault - *Good*
• Loadout - *Fair*
• MXGP - The Official Motocross Videogame - *Good*
• Path of Exile - *rated "Good"*
• KickBeat - *rating now "Excellent"
• Trials Fusion - *Not Recommended*

3D Compatibility Mode Support

Support for 3D Compatibility Mode has been added for the following games:

• **Assassin's Creed Liberation** - previously "Not Recommended", now rated as "Excellent"
• **Sniper Elite: Nazi Zombie Army** - previously "Good", now rated as "Excellent"
• **Sniper Elite: Nazi Zombie Army 2** - previously "Good", now rated as "Excellent"
• **Strike Suit Zero** - previously "Not Recommended", now rated as "Good"
• **Watch Dogs** - rated as "Good"

These games must be run in DirectX 10/11 mode to see improvements. Not compatible with 3D Vision Surround mode. See “3D Compatibility Mode” on page 6 for more information.
Limitations in This Release

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

▶ **Surround Gaming with 3-way SLI**

Surround gaming is not supported on a 3-way SLI system using GeForce GTX 200 series GPUs. [681228/683943]

▶ **NVIDIA Control Panel Display Category**

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

▶ **Negative LOD Bias Clamp**

Negative LOD bias clamp for DirectX applications is not supported on Fermi-based GPUs and later.

▶ **Hybrid Power**

Support for Hybrid Power, a Hybrid SLI technology, is discontinued and not available with this driver.

▶ **Legacy Support for GeForce 6-series and GeForce 7-series GPUs**

GeForce 6-series and GeForce 7-series GPUs have moved to legacy support with the GeForce Release 304 drivers. These products are no longer supported beginning with the GeForce Release 310 drivers.

▶ **3D Vision Legacy Support Notification for Windows Vista**

Support for 3D Vision under Windows Vista is discontinued beginning with the Release 313 drivers. 3D Vision and 3DTV Play functionality will not be available with these drivers.

NVIDIA will continue to support basic 3D Vision and 3DTV Play functionality for Windows Vista with Release 310 or earlier drivers. Basic functionality includes full-screen viewing of 3D games, pictures, and movies on 3D Vision monitors, notebooks, and 3D TVs (with 3DTV Play software installed).
Advanced Driver Information

This section contains the following additional information about the driver:

- **3D Compatibility Mode**
- **Help for Resizing Your HDTV Desktop**
- **Dynamic GPU Performance Mode**
- **Power Efficiency Optimizations**
- **Understanding the DirectX Information Shown in the NVIDIA System Information Window**

### 3D Compatibility Mode

3D Compatibility Mode is an NVIDIA proprietary rendering mode for 3D Vision that improves the 3D experience for many key DirectX 10 and 11 games. NVIDIA continues to add game support with new driver versions.

#### Requirements and Compatibility

- Games must be run in DirectX 10 or DirectX 11 mode.
- Not compatible with 3D Vision Surround.

#### Switching Compatibility Modes

Games with 3D Compatibility Mode will launch in this mode by default. You can switch between 3D Compatibility mode and standard 3D Vision mode as follows:

1. **Before starting the game, enable Advanced In-game Settings in the NVIDIA Control Panel:**
   - Open the NVIDIA Control Panel and navigate to the Stereoscopic 3D->Set up stereoscopic 3D page and click *Set Keyboard Shortcuts*.
   - Click the Show advanced in-game settings arrow if the section is not expanded, then select *Enable advanced in-game settings*.
   - Click *OK*.

2. **Press Ctrl+Alt+F11 during the game to toggle between 3D Compatibility mode and standard 3D Vision mode.**

#### Game Support

- Assassin's Creed III
- Assassin's Creed Liberation
- Assassin's Creed IV: Black Flag
- Battlefield 4
- Bioshock Infinite
• Far Cry 3
• Hitman: Absolution
• Need for Speed: Most Wanted
• Saints Row 4
• Sniper Elite: Nazi Zombie Army
• Sniper Elite: Nazi Zombie Army 2
• Sniper Elite V2
• Splinter Cell: Blacklist
• Strike Suit Zero
• Total War: Shogun 2
• Warframe
• Watch Dogs

Help for Resizing Your HDTV Desktop

The best way to resize the screen in order to view the entire content is to use the controls provided by the display hardware. Click the link on the Size tab to view a guide to changing the settings on your display hardware.

The resize controls on the NVIDIA Control Panel are provided in case satisfactory results cannot be achieved using the controls on the display.
After resizing the HDTV desktop using the NVIDIA Control Panel Resize controls, the new custom resolution created is now added to the list of available resolutions for that display, and also added to the resolution list within the game or application.

In Release 190 and later drivers, the method for resizing the HDTV desktop has changed to provide better image quality when applying underscan. This method results in a new custom resolution being created which needs to be selected from games or applications to apply the resizing. In the example displayed in the following screen shot, the underscan has created a new resolution (1216x682). Although this resolution looks different, it is still in HD format. Remember to select this resolution in your game or other application in order to take advantage of it.

**Dynamic GPU Performance Mode**

With the Release 280 drivers, NVIDIA GPU clock speeds will increase more quickly in response to increased graphics demands. Conversely, with lower graphics use the GPU clock speed slows down more quickly, conserving as much power as possible.

In the Release 280 drivers, some users reported a noticeable fluctuation in clock speeds while engaging in various tasks on the PC. With the Release 285 and later drivers, adjustments have been made to reduce the sensitivity to levels similar to the R275 driver.
Power Efficiency Optimizations

Release 310 drivers introduced power-optimizing enhancements. As a result of these enhancements, you may notice that GPU core clock speeds are different with this driver. For example, the GPU core clock might be faster when the GPU is in idle mode than in previous drivers. Or you may notice higher GPU core clock speeds after closing or opening certain games than in previous drivers.

This is because the reported GPU core clock frequency is no longer correlated to GPU power-saving states. Instead of lowering the GPU core clock frequency, the hardware and software use other methods to put the GPU into a low power state when the GPU is idle or in response to changing application requirements. This ensures optimum power use while continuing to provide high graphics performance.

Understanding the DirectX Information Shown in the NVIDIA System Information Window

The System Information window—accessed by clicking System Information at the bottom left corner of the NVIDIA Control Panel—provides technical information about the NVIDIA graphics cards and driver installed in the system.

It also provides the following system information:

- **Operating system**: For example, “Windows 7 Enterprise, 64-bit”
- **DirectX runtime version**: For example, “11.0”

*In order to use the version of DirectX reported in the System Information window, the NVIDIA GPU and graphics driver must also support that DirectX version.*

This information is provided in the Graphics card information section of the System Information window as follows:

- **DirectX support**
  (Provided in previous driver versions)
  This is the DirectX version that is supported by the NVIDIA graphics hardware and driver.

- **Direct3D API version**
  (Provided in later driver versions, for Windows 7 and later)
  This is the Direct3D version that is supported by the NVIDIA graphics hardware and driver. The API version is expressed in terms of Direct3D – the graphics subsystem component of DirectX.

- **Direct3D feature level**
  (Provided in later driver versions, for Windows 7 and later)
  Direct3D feature levels describe a subset of features within the Direct3D API version that are supported by the NVIDIA graphics hardware and driver.
Changes and Fixed Issues in Version 337.88

The following sections list the important changes and the most common issues resolved since version 337.50. This list is only a subset of the total number of changes made in this driver version. The NVIDIA bug number is provided for reference.

Windows Vista/Windows 7/Windows 8/Windows 8.1 Fixed Issues

- [PlanetSide 2]: The game may crash to a black screen. [1466333]
- [3D Vision][TitanFall]: With 3D Vision installed and XFire running, the game crashes. [1487005]
- Windows Code 43 error occurs when Hyper-V is enabled in Windows Features. [1495541]
- [GeForce GTX TITAN][Surround]: Surround mode cannot be enabled. [1447246]
- [GeForce GTX TITAN][Surround]: There is no V-Sync when attempting to enable Surround mode. [1436617]
- [GeForce GTX TITAN][Surround][Screenbright]: The application cannot control monitors using DDC/CI while in Surround mode. [1463727]
- [3 or 4-way SLI][Surround][GeForce GTX 780 Ti]: Enabling Surround on tiled 4k displays takes several minutes. [1475821]
- [GeForce GTX 745]: Line of corruption appears in the Windows Metro screen. [1465117]
- [GeForce GTX 690][Civilization V]: Game characters flicker. [1510274]
- [GeForce GTX 690][Halo 2]: Textures flicker in the game. [1486045]
- [GeForce GTX 680][X-Plane 10]: There is rendering corruption on the horizon and on borders of 3D objects. [1457473]
- [GeForce GTX 660 Ti][Need For Speed Rival]: The game crashes with an error pointing to nvwgf2umx.dll. [1442812]
- [GeForce GTX 650]: The driver is not able to detect the Vizio VA26LHDTV10T HDTV. [1441844]
- [GeForce GTX 460]: Blue-screen crash may occur shortly after starting a video in WebEx. [1496445]
- [GeForce FX 770M][Notebook]: Blue-screen crash occurs after booting to Windows. [1403221]
- [SLI][GeForce GTX 780]: Chrome browser become corrupt occasionally. [1447322]
- [SLI][GeForce GTX 570][Natural Selection 2]: Shadows flicker when playing the game with SLI mode enabled. [1481879]
- [SLI][PhysX][GeForce GTX 590+460]: Most games crash in SLI mode when using one of the GPUs with a dedicated PhysX GPU. [1440083]
Changes and Fixed Issues in Version 337.50

The following sections list the important changes and the most common issues resolved since version 335.23. This list is only a subset of the total number of changes made in this driver version. The NVIDIA bug number is provided for reference.

Windows Vista/Windows 7/Windows 8/Windows 8.1 Fixed Issues

- [GeForce GTX 650][Steam In-Home streaming]: OpenGL errors occur when streaming an OpenGL game. [1454236]
- [GeForce GTX 680][Surround][Sid Meier’s Civilization Railroads]: The game crashes when launched in Surround mode. [1421938]
- [SLI][GeForce GTX 260]: 3D games flicker when run at 1920x1080i resolution. [1203614]
Open Issues in Version Version 337.91

As with every released driver, version Version 337.91 of the Release 337 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 1
- “Windows Vista/Windows 7 64-bit Issues” on page 1
- “Windows 8 32-bit Issues” on page 3
- “Windows 8 64-bit Issues” on page 3
- “Windows 8.1 Issues” on page 4

Windows Vista/Windows 7 32-bit Issues

Single GPU Issues

GeForce 500 Series

- [GeForce 500 series] [Need for Speed: The Run]: During the race the sun flickers and there are bright blips and black patches. [909577]
- [GeForce 500 Series]: Metro 2033–light bloom increases and decreases throughout the game at light sources such as bulbs, lanterns, or fire. [846214]

GeForce 8 Series GPUs

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

Windows Vista/Windows 7 64-bit Issues

Single GPU Issues

- [Guild Wars 2]: Ambient Occlusion effect disappears at different camera angles and when using supersampling. [1023202]
- [NVIDIA Control Panel][Notebook]: The Workstation->Manage GPU Utilization page is available even though Maximus Technology is not supported on notebooks. [200003127]

GeForce 500 Series

- [GeForce 500 series] [Need for Speed: The Run]: During the race the sun flickers and there are bright blips and black patches. [909577]
- GeForce 500 series: Deus Ex–there is corruption on the ground in later levels of the game. [871486]
Open Issues in Version Version 337.91

- GeForce 500 Series: Metro 2033–light bloom increases and decreases throughout the game at light sources such as bulbs, lanterns, or fire. [846214]

- GeForce 400 series: Total War: Shogun 2 –the sun and surrounding area within the game flickers. [807036]

NVS Series

- NVS 4200M, Optimus: F1 2011–the game hangs while selecting “Quit To Main Menu” during gameplay. [879537]

Multi-GPU Issues

- [SLI], [Company of Heroes: Tales of Valor]: With SLI enabled, there is heavy flickering in the game after switching from windowed mode to full-screen mode. [892264]

GeForce 500 Series

- [SLI] [GeForce 500 series]: With SLI enabled, the secondary Dualview display may go blank after hot-plugging the DisplayPort monitor and then rebooting the system. [906810]

- [SLI], GeForce 500 Series: Dragon Age II (DirectX 11)–shadows flicker in the cutscene when SLI is enabled. [849235]

GeForce 400 Series

- [SLI], GeForce 400 series, Surround gaming: Dragon Age Origins– the game does not render single monitor resolutions correctly when Surround gaming is enabled. [663802]

GeForce 200 Series

- [Quad SLI/Multi-GPU], [GeForce 200 series] [Batman: Arkham City DirectX 9]: Game performance drops when Quad-SLI or Multi-GPU mode is enabled. [891613/966120]

- [SLI], [GeForce 200 series]: The display may go blank for close to 30 seconds while disabling SLI. [922557]

- [SLI], GeForce 200 Series, Surround gaming: Medusa–the game doesn’t span completely across the monitors if any resolution other than the native resolution is set. [670390]
Open Issues in Version Version 337.91

Windows 8 32-bit Issues

- [NVIDIA Control Panel][Notebook]: The Workstation->Manage GPU Utilization page is available even though Maximus Technology is not supported on notebooks. [200003127]

Windows 8 64-bit Issues

- [4k Tiled Display]: Occasionally, the system may lock up or the NVIDIA Control Panel controls may fail on a 4k tiled display when running 3D applications. [200004523]
- [Optimus][Notebook]: After installing the driver, the Device Manager includes an entry for the NVIDIA Virtual Audio Device but the entry has a yellow bang.

  *The NVIDIA Virtual Audio Device is not needed nor used on Optimus notebooks, so there is no effect on your notebook function. To remove the yellow bang, reboot your notebook.*

- [NVIDIA Control Panel][Notebook]: The Workstation->Manage GPU Utilization page is available even though Maximus Technology is not supported on notebooks. [200003127]

- [Guild Wars 2]: Ambient Occlusion effect disappears at different camera angles and when using supersampling. [1023202]
Windows 8.1 Issues

- [NVIDIA Control Panel][Notebook]: The Workstation->Manage GPU Utilization page is available even though Maximus Technology is not supported on notebooks. [200003127]

- [4k Tiled Display]: Occasionally, the system may lock up or the NVIDIA Control Panel controls may fail on a 4k tiled display when running 3D applications. [200004523]

- [3D Vision]: While playing a stereoscopic 3D video with stereoscopic 3D enabled, the monitor refresh rate switches to 60 Hz after changing the resolution using the Windows control panel. [1314811]

- With a 3DTV connected and the resolution set to an HD3D resolution through the NVIDIA Control Panel, the display flickers constantly after installing the driver via INF over driver version 320.49. [1315116]

- [Surround[GeForce GTX 780 Ti 3x]: HDCP error occurs while playing Blu-ray disc in Surround mode when accessory display is attached. [1429829]
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 5
► “Windows 7 Considerations” on page 5
► “Unsupported Features” on page 6
► “OpenGL Application Issues” on page 7
► “Application Issues” on page 8
► “Operating System Issues” on page 13

Windows Vista Considerations

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.

Windows 7 Considerations

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>
<thead>
<tr>
<th>Clockwise Rotation</th>
<th>Windows 7 Label</th>
<th>Windows Vista Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 degrees</td>
<td>Landscape</td>
<td>No rotation (Landscape)</td>
</tr>
<tr>
<td>90 degrees</td>
<td>Portrait</td>
<td>90 degrees to the right (Inverted Portrait)</td>
</tr>
<tr>
<td>180 degrees</td>
<td>Landscape (flipped)</td>
<td>180 degree rotation (Inverted landscape)</td>
</tr>
<tr>
<td>270 degrees</td>
<td>Portrait (flipped)</td>
<td>90 degrees to the left (Portrait)</td>
</tr>
</tbody>
</table>

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/Windows 7:

- 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.
  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 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.
Not NVIDIA Issues

- **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 cannot be supported in NVIDIA graphics drivers. NVIDIA recommends using the built-in Windows Vista multi-display modes.

- **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)
- **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

- **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 recompose. Applications should therefore minimize the frequency with which they flush the rendering queue.

Application Issues

• [Surround][Crysis 3]: With Surround enabled, the mouse cursor is restricted to one of the displays after launching the game. [1331143]
• Adobe Flash 10.x/11.x–1080p video content stutters during browser playback in full-screen mode.
  
  *The issue is resolved with Flash 11.0.1.83 and later.*
• GeForce 500 Series: Crysis 2 (DirectX 11 mode)–with 16x Antisotropic filtering set using the NVIDIA Control Panel, there is LOD distortion and other issues with AF. [848406]
• GeForce 400 Series: Dirt 2–the game does not show any 3D-rendered objects when multisample antialiasing is increased to 16xCSAA or higher. [644651]
• GeForce 400 Series: Aliens vs Predator (DirectX 11)–there is ghosting in the sky textures.[660817]
• GeForce 400 Series: S.T.A.L.K.E.R Clear Sky–there is flickering in the background when Sun Shadow is enabled. [667627]
• Dirt2–distant terrain is clipped. [644821]
• Dark Void–if you experience issues playing Dark Void, NVIDIA recommends the following steps:
  
a Install all game patches.
  
  Retail box owners can get the patch here: http://download.nvidia.com/downloads/nZone/patches/DarkVoid_PhysX_Update_Patch.exe
  
  b From the Windows Control Panel->Add/Remove programs, uninstall **NVIDIA Game System Software 2.8.1**.
  
  c From the Windows Control Panel->Add/Remove programs, right-click **NVIDIA PhysX** and then click **Repair**.
  
  If you still experience problems after performing these steps, then either enable V-Sync or skip the cut-scenes by pressing [Enter] twice at the cut-scene.
  
  Operation Flashpoint: Dragon Rising–the game crashes to the desktop when it starts to load.
  
  *This is an issue in the application—the problem does not occur if you disconnect your internet cable.*
World of Warcraft—if you have run the 3D Vision setup wizard, then the game automatically enables 3D stereo even after you disable it.

To work around this issue, you must uninstall the 3D Vision driver.

Counter Strike—the application crashes to the desktop if the resolution or bit-depth is changed from the in-game video options menu. [416582]

This is an application issue, but the problem does not occur if you change the resolution or bit-depth from the game’s main menu and not while in a game.

Star Wars: Knights Of The Old Republic 2—the game fails to launch, and an “application has stopped working” error message appears. [420115]

This occurs because the application is not able to interpret the driver version correctly.

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 “compatible cursors 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.
- Windows Vista 64-bit, [PhysX]: TheGameCreators PhysX Screen Saver doesn’t get installed properly. [491613]
  This is not an NVIDIA issue, but a bug in Vista 64-bit OS that affects the installation of many screen savers. To work around, locate the corresponding.scr file for the screen saver, then right-click and select Install.
  Note: PhysXscreensaver.scr is located in <system root>\windows\SysWOW64.
- GeForce 9800 GTX: Flight Simulator Acceleration (DirectX 10) - the sky box does not render correctly when zoomed all the way out. [436158]
  This is not an NVIDIA bug, but rather an application issue.
- GeForce 9800 GTX: Flight Simulator Acceleration (DirectX 10) - there is no antialiasing preview window. [436156]
- GeForce 9800 GX2: Fury (DirectX 10)–the character names flicker. [384917]
  This is not an NVIDIA bug, but rather an application issue.
- GeForce 9600 GT, GeForce 9800 GX2, GeForce 8800 GTX/Ultra/GTS/GT: Assassin’s Creed: Directors Cut - the shadow flickers. [400541]
  This is not an NVIDIA bug, but rather an application issue.
- GeForce 9600 GT: Crysis (DirectX 9) - there is corruption in the game. [399261]
  This is not an NVIDIA bug, but rather an issue with the application issue. To avoid this issue, use the DirectX 10 option of the game.
- 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]
  This is not an NVIDIA bug, but rather an application issue.
- 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. [308248/316633]
- 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 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 8600 GT: Battlefield 2—the game crashes to desktop when set to 1900x1440 resolution 8x antialiasing. [322008]
  
  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: 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.
Not NVIDIA Issues

GeForce 8600M GT: Warmonger 2.1—the game intermittently stops responding after changing in-game resolution. [482889]

GeForce 8600M GT: Dead Space - a "your graphics card does not meet Dead Space minimum requirement" error message appears after launching the game. [491410]

This is a limitation of the application, and only occurs if your monitor does not support 60 Hz refresh rate.

GeForce 8600M GT: MPEG1 and MPEG2 playback using iTunes is choppy. [537550]

The application does not use hardware acceleration.

Application Issues Under SLI Mode

[SLI], GeForce 200 series, Surround gaming: Pacific Fighters—the game fails to switch to Surround gaming resolutions even though they are listed in the game menu. [670389]

[SLI], GeForce 200 Series: BioShock 2—artifacts appear in the game when SLI mode is enabled. [653303]

This is an application multi-GPU compatibility issue.

[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 9800 GX2: The Witcher—a blooming light shines through objects with SLI mode enabled. [396736]

This is not an NVIDIA bug, but rather an application issue.

[Quad SLI], GeForce 9800 GX2: Test Driver Unlimited—there is pausing/hitching during the cut scene transitions. [395207]

[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 8800: While uninstalling 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]
Operating System Issues

Windows Vista

► Direct-X diagnostics tool (DXDIAG) may report an unexpected value for the display adapter’s memory. [673360]

See the Microsoft KB article http://support.microsoft.com/kb/2026022.

► [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 issue is resolved in Windows 7.

► 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 DirectX.

► Windows Vista, 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 issue is resolved in Windows 7.

Windows 8 Issues

► When upgrading from Windows 7 to Windows 8, the system fails to retrieve the installed WHQL display driver. [1024416]

See the Microsoft KB article KB2743349 http://support.microsoft.com/kb/2743349.
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:

► “GPU Temperature Reported Incorrectly on Optimus Systems” on page 15
► “Damaged or Missing WMI Service Will Prevent NVIDIA Driver Installation” on page 15
► “Screen Turns Black When Performing Clean Overinstall of NVIDIA Drivers on Windows 8.1 Optimus Notebook” on page 16
► “Flickering Black Screen Occurs After Installing the NVIDIA Drivers on Windows 8” on page 16
► “Total Available Graphics Memory Reported Incorrectly” on page 18
► “Increasing 4-way SLI/Multi-GPU Performance” on page 19
► “3D Vision USB Driver Does Not Get Installed” on page 19
► “No PhysX Acceleration Using the GPU” on page 20
► “NVIDIA PhysX System Software Cannot be Installed or Uninstalled in Windows Safe Mode” on page 20
► “3DMark 11 Does not Run in Stereoscopic 3D Mode” on page 20
► “Do not Use Windows Rollback for Graphics Drivers” on page 21
► “Uninstalling Drivers Using Device Manager is not Supported” on page 21
► “Changing the Primary Display Across SLI GPUs Takes Longer than Expected” on page 21
► “Understanding the DirectX Version Shown in the NVIDIA System Information Window” on page 22
► “Using HDMI Audio with Displays that have a High Native Resolution” on page 22
► “Using HDMI Displays that do not Support Audio” on page 23
► “Using HDMI/DisplayPort Audio in Dualview or Clone Mode Configurations” on page 24
► “Flat Panel Scaling Controls are Non-functional for Some TV Modes for Some Displays” on page 24
► “GPU Runs at a High Performance Level (full clock speeds) in Multi-display Modes” on page 25
► “GeForce GTX 295 Fan Control Does not Function With NVIDIA Control Panel Performance Group version 6.03.06.00” on page 25
► “1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors” on page 25
► “Image Sharpening Control not Available with GeForce 8 Series and later GPUs” on page 25
Known Product Limitations

▶ “Gigabyte GA-6BX Motherboard” on page 26

GPU Temperature Reported Incorrectly on Optimus Systems

Issue

On Optimus systems, temperature-reporting tools such as Speccy or GPU-Z report that the NVIDIA GPU temperature is zero when no applications are running.

Explanation

On Optimus systems, when the NVIDIA GPU is not being used then it is put into a low-power state. This causes temperature-reporting tools to return incorrect values.

Waking up the GPU to query the temperature would result in meaningless measurements because the GPU temperature change as a result.

These tools will report accurate temperatures only when the GPU is awake and running.

Damaged or Missing WMI Service Will Prevent NVIDIA Driver Installation

Issue

“Install failed” or “Install Failed, could not find compatible graphics hardware” message may appear during installation, even if the system has a compatible graphics card. This can occur when installing the NVIDIA driver or GeForce Experience software.

Cause

This issue could be the result of a corrupt WMI service on your system. The NVIDIA Installer requires the WMI service to properly install the driver or other NVIDIA software.

Resolution

You must repair the WMI service on your system in order to successfully install NVIDIA drivers. A future driver release will alert the user during installation that there is a problem with the WMI service on the system.
Screen Turns Black When Performing Clean Overinstall of NVIDIA Drivers on Windows 8.1 Optimus Notebook

Issue

After installing a Release 325 driver earlier than version 326.09 on an Optimus notebook running Windows 8.1, a subsequent clean overinstall of a later driver results in a black screen. The screen turns black when the driver uninstalls the older driver.

Typically, you may encounter this when attempting to upgrade the NVIDIA driver after installing Windows 8.1. While installing Windows 8.1, Windows Update installs NVIDIA driver version 326.01, then during the clean overinstall the black screen occurs as the older driver is uninstalled.

Workaround - Prevention

To avoid the issue during the initial installation of Windows 8.1, do not reboot the system after Windows Update installs the NVIDIA driver. Then perform the custom clean overinstall of the newer driver.

Resolution

This issue does not occur after installing an NVIDIA driver version 326.09 or later for Windows 8.1. When driver version 326.09 or later is installed, performing a clean overinstall with a newer driver will not result in a black screen.

Flickering Black Screen Occurs After Installing the NVIDIA Drivers on Windows 8

Issue

After installing the NVIDIA drivers on Windows 8, the subsequent reboot results in a black or flickering screen.

Root Cause

This occurs because Windows Update performed a background installation of a Release 304 driver, which requires a reboot to complete the installation. After installing the Release 313 driver and then rebooting the system, installation of both the Release 304 as well as the Release 313 is completed, resulting in conflicting driver binaries and the black/flickering screen.
Workaround - Prevention

To avoid the issue, reboot the system before installing the Release 313 driver.

Alternately, you can check the driver status under the Device Manager and perform the reboot if the Device Manager indicates that a restart is needed. Then install the driver.

Workaround - Recovery

If you did not perform the necessary reboot prior to installing the driver and now encounter the black screen, do the following:

1. Reboot in Safe Mode.
2. Uninstall the driver.
3. Disconnect from the internet and then restart the system.
4. In normal mode, install the new driver.
Total Available Graphics Memory Reported Incorrectly

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

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 under reporting can be extreme. For example, 6 GB might be reported as 454 MB, and 8 GB might be reported as 1259 MB.

Driver Action for GeForce-based Graphics Systems

On graphics systems with less than 2.75 GB of advertized physical memory, the NVIDIA display driver typically limits the Shared System Memory to maintain a TAG memory value of less than 4 GB\(^1\).

- This results in reliable reporting of sub-4 GB TAG memory on systems with less than 2.75 GB of advertized physical memory.

- On systems with 2.75 GB or more of advertized physical memory, you may see different reported TAG memory values between the NVIDIA Control Panel and other reporting APIs.

---

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).
Increasing 4-way SLI/Multi-GPU Performance

Issue

With some games and applications, you may experience little to no performance gain or even a performance drop with 4-way SLI or multi-GPU configurations.

Resolution

1. Open the NVIDIA Control Panel, then click Manage 3D Settings from the navigation pane.
2. Click the Global Settings tab, then scroll to the Power management mode feature, click the corresponding list arrow and select Prefer maximum performance, then click Apply.

3D Vision USB Driver Does Not Get Installed

Issue

After installing the NVIDIA graphics driver, if the 3D Vision USB emitter was not plugged in, the 3D Vision USB Controller driver does not get installed. If you plug in the emitter after installing the driver, the indicator light on the emitter will flash red and will not turn green.

Resolution

To fix this issue, NVIDIA recommends performing a driver re-install with the 3D Vision USB emitter connected. Please download the latest drivers and follow these steps:

1. Plug in the 3D Vision USB emitter.
2. Re-install the NVIDIA driver.
   - Select Custom (Advanced) and then select Perform a clean Installation during the driver installation.
3. Reboot.
No PhysX Acceleration Using the GPU

If after installing the PhysX System Software you find that there is no PhysX acceleration on supported applications, repeat the PhysX setup as follows:

1. Reboot the PC.
2. Open the NVIDIA Control Panel and then, under 3D Settings, click **Set PhysX configuration** to open that page.
3. Under **Select a PhysX processor**, verify that either **auto-select** or a specific NVIDIA GPU is selected.
4. Click **Apply**.

NVIDIA PhysX System Software Cannot be Installed or Uninstalled in Windows Safe Mode

**Issue**

Beginning with Release 280, the NVIDIA PhysX System Software is not included in the NVIDIA driver installation/uninstallation under safe mode.

**Explanation**

The NVIDIA PhysX System Software installer is not compatible with Microsoft’s policy for Windows safe Mode. Consequently, installation or uninstallation of the PhysX System Software under safe mode would fail. To allow installation or uninstallation of the graphics driver under safe mode, the NVIDIA PhysX System Software is blocked from the process.

3DMark 11 Does not Run in Stereoscopic 3D Mode

**Issue**

When attempting to run 3DMark 11 with NVIDIA 3D Vision enabled, the benchmark may hang, present a black screen, or in other ways not appear correctly.

**Explanation**

3DMark 11 is not compatible with running in stereoscopic 3D. To facilitate running the benchmark, recent drivers will run it in monoscopic mode, even with 3D Vision enabled.
Known Product Limitations

Do not Use Windows Rollback for Graphics Drivers

To reinstall a previous or older NVIDIA graphics driver, do not use the Windows rollback feature. This method will not reliably restore all the previous driver files.

Instead, use the Windows Add and Remove programs to remove the current driver, and then install the older driver using setup.exe.

Uninstalling Drivers Using Device Manager is not Supported

Issue

On all supported versions of Microsoft Windows, uninstalling the NVIDIA driver using the Windows Device Manager may not remove associated files or applications.

Explanation

Microsoft has confirmed that this behavior is by design. If you wish to uninstall the NVIDIA driver, it is recommended that you do so using Add and Remove programs.

See the Microsoft KB article 2278714.

Changing the Primary Display Across SLI GPUs Takes Longer than Expected

Issue

On an SLI system, switching the primary (or SLI focus) display when each display in the SLI group is connected to a different GPU takes longer than expected.

Explanation

On an SLI system with each SLI GPU driving a display, the display connected to the slave GPU is the primary display (also the SLI focus display). In order to switch the primary display to the one connected to the other GPU, the master and slave GPU configuration must also switch. In order to reassign which GPU is the master and which is the slave, the driver must be reloaded. It the process of reloading the driver that takes the additional time.
Understanding the DirectX Version Shown in the NVIDIA System Information Window

The System Information window—accessed by clicking System Information at the bottom left corner of the NVIDIA Control Panel—provides technical information about the NVIDIA graphics cards and driver installed in the system.

It also provides information about the Windows version as well as the DirectX version that is installed.

However, in order to use the version of DirectX reported in the System Information window, the NVIDIA GPU and graphics driver must also support that DirectX version.

For example, driver version 197.45 and Windows Vista (with available patch) support DirectX 11. But only NVIDIA graphics cards based on the Fermi architecture released in 2010 support DirectX 11. So your system must have one of these cards installed in order to take advantage of DirectX 11 performance.

Using HDMI Audio with Displays that have a High Native Resolution

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

Some HDMI displays have a native resolution that exceeds the maximum supported HD mode. For example, displays 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 Displays that do not Support Audio

Some HDMI displays do not support audio, or have issues with GeForce 9 series and earlier, and GeForce GTX 200-series 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 GeForce 9 series and earlier, and GeForce GTX 200-series 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-> Set Up Digital Audio page. Click the arrow for the problem display and then click Turn off audio.

Video but no audio

▶ Check the display list for the problem connection on the NVIDIA Control Panel->Set Up Digital Audio page.

▶ If Turn off audio is selected and you want to test whether your HDMI audio does, in fact, work, then click the list arrow and select the name of the display.

    The driver will prompt you with instructions for testing HDMI audio with that display.

▶ If the display name 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.
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.

Flat Panel Scaling Controls are Non-functional for Some TV Modes for Some Displays

The NVIDIA Control Panel flat panel scaling controls on the “Adjust Size & Position” page are not intended to be used for TV modes, and normally the controls are not available for TV or HDTV displays.

However, Microsoft requires that certain TV/HDTV modes be available for all digital displays, including DVI and HDMI, even if they are not HDTV.

While the NVIDIA flat panel scaling controls are available for those displays, they will not be functional for the TV modes that appear in compliance with the Microsoft requirements. The affected modes are as follows:

- 1920x1080i @50/59.94/60 Hz
- 1280x720p @50/59.94/60 Hz
- 720x480p @ 59.94/60 Hz
- 720x576p @ 50 Hz
Known Product Limitations

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

This is a hardware limitation with desktop and older notebook GPUs, and not a software bug. When multiple displays are connected and active, the GPU will always operate with full clock speeds in order to efficiently drive multiple displays—even when no 3D programs are running.

Note: NVIDIA notebook GeForce 5xxM series and later GPUs do not have this limitation. For those GPUs the driver can adjust the performance level, depending on demand, even when driving multiple displays.

GeForce GTX 295 Fan Control Does not Function With NVIDIA Control Panel Performance Group version 6.03.06.00

The GeForce GTX 295 fan control does not function properly when using the NVIDIA Control Panel Performance Group version 6.03.06.00. For proper fan control, use version 6.03.12.00 or later.

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.

Image Sharpening Control not Available with GeForce 8 Series and later GPUs

With GeForce 8 Series and later graphics cards, the Image sharpening slider on the NVIDIA Control Panel-> Display->Adjust Desktop Color Settings page is grayed out.

This control is intentionally disabled because image sharpening is not supported on GeForce 8 series and later GPUs.
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.
This chapter covers the following main topics:

- “About the Release 337 Driver” on page 27
- “Hardware and Software Support” on page 28
- “Driver Installation” on page 32

About the Release 337 Driver

This driver release is from the Release 337 family of drivers (versions 337.xx to 339.xx). This driver package supports the GeForce 8, 9, 100, 200, 300, 400, 500, 600, and 700-series desktop GPUs as well as ION desktop GPUs. See “Supported NVIDIA Desktop Products” on page 28 for the list of specific products supported in this release.
Hardware and Software Support

- “Supported Operating Systems” on page 28
- “Supported NVIDIA Desktop Products” on page 28
- “Supported Languages” on page 32

Supported Operating Systems

This Release 337 driver includes drivers designed for the following Microsoft® operating systems:

- 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 Desktop Products

The following table lists the NVIDIA products supported by the Release 337 driver, version 337.91:

Table 2.1 Supported NVIDIA Desktop GPUs

<table>
<thead>
<tr>
<th>Consumer Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>ION</td>
</tr>
<tr>
<td>ION LE</td>
</tr>
<tr>
<td>GeForce GTX TITAN Z</td>
</tr>
<tr>
<td>GeForce GTX TITAN Black</td>
</tr>
<tr>
<td>GeForce GTX TITAN</td>
</tr>
<tr>
<td>GeForce GTX 780</td>
</tr>
<tr>
<td>GeForce GTX 780 Ti</td>
</tr>
<tr>
<td>GeForce GTX 770</td>
</tr>
<tr>
<td>GeForce GTX 760</td>
</tr>
<tr>
<td>GeForce GTX 760 Ti (OEM)</td>
</tr>
<tr>
<td>GeForce GTX 750 Ti</td>
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<tr>
<td>GeForce GTX 750</td>
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<tr>
<td>GeForce GTX 690</td>
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<td>GeForce GTX 680</td>
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<tr>
<td>GeForce GTX 670</td>
</tr>
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<td>GeForce GTX 660 Ti</td>
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### Table 2.1  Supported NVIDIA Desktop GPUs

<table>
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<tr>
<th>Consumer Products</th>
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<tbody>
<tr>
<td>GeForce GTX 660</td>
</tr>
<tr>
<td>GeForce GTX 650 Ti BOOST</td>
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<tr>
<td>GeForce GTX 650 Ti</td>
</tr>
<tr>
<td>GeForce GTX 650</td>
</tr>
<tr>
<td>GeForce GT 645</td>
</tr>
<tr>
<td>GeForce GT 640</td>
</tr>
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<td>GeForce GT 620</td>
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<td>GeForce GTX 680</td>
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<tr>
<td>GeForce GTX 590</td>
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<td>GeForce GTX 580</td>
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<td>GeForce GTX 570</td>
</tr>
<tr>
<td>GeForce GTX 560 SE</td>
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<tr>
<td>GeForce GTX 560</td>
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<tr>
<td>GeForce GTX 560 Ti</td>
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<tr>
<td>GeForce GTX 555</td>
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<tr>
<td>GeForce GTX 550 Ti</td>
</tr>
<tr>
<td>GeForce GTX 480</td>
</tr>
<tr>
<td>GeForce GTX 470</td>
</tr>
<tr>
<td>GeForce GTX 465</td>
</tr>
<tr>
<td>GeForce GTX 460 SE and 460 SE v2</td>
</tr>
<tr>
<td>GeForce GTX 460 v2</td>
</tr>
<tr>
<td>GeForce GTX 295</td>
</tr>
<tr>
<td>GeForce GTX 285</td>
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<td>GeForce GTX 280</td>
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<tr>
<td>GeForce GTX 275</td>
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<tr>
<td>GeForce GTX 260</td>
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<tr>
<td>GeForce GTS 450</td>
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<td>GeForce GTS 250</td>
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<td>GeForce GTS 240</td>
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<tr>
<td>GeForce GTS 150</td>
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<td>GeForce GT 545</td>
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### Table 2.1  Supported NVIDIA Desktop GPUs

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<td>GeForce GT 430</td>
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<tr>
<td>GeForce GT 340</td>
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<tr>
<td>GeForce GT 330</td>
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<tr>
<td>GeForce GT 320</td>
</tr>
<tr>
<td>GeForce GT 240</td>
</tr>
<tr>
<td>GeForce GT 220</td>
</tr>
<tr>
<td>GeForce G210</td>
</tr>
<tr>
<td>GeForce 405</td>
</tr>
<tr>
<td>GeForce 210</td>
</tr>
<tr>
<td>GeForce 205</td>
</tr>
<tr>
<td>GeForce GTS 150</td>
</tr>
<tr>
<td>GeForce GT 130</td>
</tr>
<tr>
<td>GeForce GT 120</td>
</tr>
<tr>
<td>GeForce G100</td>
</tr>
<tr>
<td>GeForce 9800 GX2</td>
</tr>
<tr>
<td>GeForce 9800 GTX+</td>
</tr>
<tr>
<td>GeForce 9800 GTX</td>
</tr>
<tr>
<td>GeForce 9800 GT</td>
</tr>
<tr>
<td>GeForce 9600 GT</td>
</tr>
<tr>
<td>GeForce 9600 GS</td>
</tr>
<tr>
<td>GeForce 9600 GSO</td>
</tr>
<tr>
<td>GeForce 9500 GT</td>
</tr>
<tr>
<td>GeForce 9500 GS</td>
</tr>
<tr>
<td>GeForce 9400 GT</td>
</tr>
<tr>
<td>GeForce 9400</td>
</tr>
<tr>
<td>GeForce 9300 GS</td>
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<tr>
<td>GeForce 9300 GE</td>
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<td>GeForce 9300</td>
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<tr>
<td>GeForce 9200</td>
</tr>
<tr>
<td>GeForce 8800 Ultra</td>
</tr>
<tr>
<td>GeForce 8800 GTX</td>
</tr>
<tr>
<td>GeForce 8800 GTX 512</td>
</tr>
<tr>
<td>GeForce 8800 GTS</td>
</tr>
</tbody>
</table>
Table 2.1  Supported NVIDIA Desktop GPUs

<table>
<thead>
<tr>
<th>Consumer Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>GeForce 8800 GT</td>
</tr>
<tr>
<td>GeForce 8800 GS</td>
</tr>
<tr>
<td>GeForce 8600 GTS</td>
</tr>
<tr>
<td>GeForce 8600 GT</td>
</tr>
<tr>
<td>GeForce 8600 GS</td>
</tr>
<tr>
<td>GeForce 8500 GT</td>
</tr>
<tr>
<td>GeForce 8400 GS</td>
</tr>
<tr>
<td>GeForce 8400 SE</td>
</tr>
<tr>
<td>GeForce 8400</td>
</tr>
<tr>
<td>GeForce 8300 GS</td>
</tr>
<tr>
<td>GeForce 8300</td>
</tr>
<tr>
<td>GeForce 8200</td>
</tr>
<tr>
<td>GeForce 8100 / nForce 720a</td>
</tr>
</tbody>
</table>
Supported Languages

The Release 337 Graphics Drivers supports the following languages in the main driver Control Panel:

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

Driver Installation

Minimum Hard Disk Space

Desktop

The hard disk space requirement for 32-bit is minimum 220 MB for English-only, and 300 MB for International.

The hard disk space requirement for 64-bit is minimum 320 MB for English-only, and 400 MB for International.

Notebook

The hard disk space requirement for 32-bit is minimum 300 MB.

The hard disk space requirement for 64-bit is minimum 400 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.

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. From the driver download page, click the Download button. The Download Confirmation page appears.
3. If you agree to the “License For Customer Use of NVIDIA Software”, click the Agree & Download button to begin the download. The File Download dialog appears.
4. Either click Save to save the file and then run it from your PC, or click Run.
   An extraction path dialog appears prompting you to specify where on your PC you want the driver files to be installed.
5. Click OK to use the default location, or click the folder icon and specify an alternate location to install the driver files.
   The files are extracted and then the NVIDIA Installer is launched automatically.
6. At the License Agreement page of the Installer, click Agree and Continue.
7. Follow the instructions in the NVIDIA Installer to complete the installation.

Note: The driver presents game screenshots while the driver is installing. If you are not connected to the internet during the installation, you may see a “Navigation to the webpage was cancelled” message instead. The message can be ignored and does not affect the installation. The message won’t appear if the browser cache is cleared.

Note: The NVIDIA PhysX System Software will not be included in the installation if the same version or a later version is already installed.
**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.

See also the installation/uninstallation considerations explained in “Known Product Limitations” on page 14.
APPENDIX A  MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 337 driver for NVIDIA products. It contains these sections:

► “General Mode Support Information” on page 36
► “Default Modes Supported by GPU” on page 37
► “Modes Supported by TV Encoders” on page 40
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 37.

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

<table>
<thead>
<tr>
<th>Display</th>
<th>Maximum Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple 30” Cinema HD Display (Dual link DVI)</td>
<td>2560x1600 @ 60 Hz</td>
</tr>
<tr>
<td>Dell WFP 3007 (Dual Link DVI)</td>
<td>2560x1600 @ 60 Hz</td>
</tr>
<tr>
<td>HP LP3065 dual-link DVI flat panel</td>
<td>2560x1600 @ 60 Hz.</td>
</tr>
</tbody>
</table>

Table A.2  Non-standard Modes Supported

<table>
<thead>
<tr>
<th>Resolution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1680 x 1050</td>
<td></td>
</tr>
<tr>
<td>1366 x 768</td>
<td></td>
</tr>
</tbody>
</table>
Default Modes Supported by GPU

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

▶ “GeForce 700, 600, 500, 400, 300, 200, 100, 9 Series, and 8 Series GPUs” on page 38

Understanding the Mode Format

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

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Color Depth</th>
<th>Refresh Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1024 x 768</td>
<td>32</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200</td>
</tr>
</tbody>
</table>

**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.
Appendix A: Mode Support for Windows

GeForce 700, 600, 500, 400, 300, 200, 100, 9 Series, and 8 Series GPUs

This section lists the supported display resolutions, color depths, and refresh rates for the products listed in “Supported NVIDIA Desktop Products” on page 28.

Standard Modes

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Color Depth</th>
<th>Refresh Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>720 x 480</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>720 x 576</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>800 x 600</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1152 x 864</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 720</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>1280 x 768</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 800</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 960</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1360 x 768</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 900</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 1024</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 1200</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1680 x 1050</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1080</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1200</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1920 x 1440</td>
<td>8</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>2048 x 1536</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>640 x 480</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>720 x 480</td>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>720 x 576</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td>800 x 600</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1152 x 864</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 720</td>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>1280 x 768</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 800</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 960</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1360 x 768</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 900</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 1024</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1600 x 1200</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1680 x 1050</td>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1080</td>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1200</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>1920 x 1440</td>
<td>16</td>
<td>60 70 72 75 85 100 120 140 144 150 170 200 240</td>
</tr>
<tr>
<td>2048 x 1536</td>
<td>16</td>
<td>60</td>
</tr>
</tbody>
</table>
### Appendix A: Mode Support for Windows

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Interlaced</th>
<th>Refresh Rate (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1280 x 720</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1280 x 768</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1280 x 800</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1360 x 768</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1600 x 900</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1600 x 1024</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1600 x 1200</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1680 x 1050</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1080</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1200</td>
<td>32</td>
<td>60, 70, 72, 75, 85, 100</td>
</tr>
<tr>
<td>1920 x 1440</td>
<td>32</td>
<td>60, 70, 72, 75, 85</td>
</tr>
<tr>
<td>2048 x 1536</td>
<td>32</td>
<td>60</td>
</tr>
</tbody>
</table>
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

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

Table A.4  Mode Support for Component YPrPb Out and DVI Out

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>480i (SDTV)</td>
<td>Supported on graphics boards with Conexant 875 or Philips 7108 TV encoders and compatible connectors, and compatible GeForce 8 Series and later GPUs.</td>
</tr>
<tr>
<td>480p (EDTV)</td>
<td></td>
</tr>
<tr>
<td>720p (HDTV)</td>
<td></td>
</tr>
<tr>
<td>1080i (HDTV)</td>
<td></td>
</tr>
<tr>
<td>576i (PAL)</td>
<td></td>
</tr>
<tr>
<td>576p (PAL)</td>
<td></td>
</tr>
</tbody>
</table>

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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