



# ForceWare Graphics Drivers ***Release 100 Notes***

**Version 100.54**

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

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## CHAPTER

## 1

# INTRODUCTION TO *RELEASE 100 NOTES*

This edition of *Release 100 Notes* describes the Release 100 ForceWare Graphics Drivers and provides information applicable to all NVIDIA drivers. NVIDIA provides these notes to describe performance improvements and bug fixes in each documented version of the driver.

## Structure of the Document

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This document is organized in the following sections:

- “[Release 100 Driver Changes](#)” on page 3 gives a summary of changes, and fixed and open issues in this version.
- “[The Release 100 Driver](#)” on page 15 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 21 lists the default resolutions supported by the driver.

## Changes in this Edition

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This edition of the *Release 100 Notes* for Windows Vista includes information about NVIDIA ForceWare graphics driver version 100.54, and lists changes made to the driver since version 97.46. These changes are discussed beginning with the chapter “[Release 100 Driver Changes](#)” on page 3.



## CHAPTER

## 2

## RELEASE 100 DRIVER CHANGES

This chapter describes open issues for version 100.54, and resolved issues and driver enhancements for versions of the Release 100 driver up to version 100.54. The chapter contains these sections:

- “Version 100.54 Highlights” on page 4
- “Changes in Version 100.54” on page 7
- “Changes in Version 100.53” on page 8
- “Open Issues in Version 100.54” on page 10
- “Not NVIDIA Issues” on page 12
- “Known Product Limitations” on page 14

## Version 100.54 Highlights

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This section provides highlights of version 100.54 of the NVIDIA Release 100 Driver for Windows Vista.

### What's New in Version 100.54

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#### NVIDIA SLI™ Technology

On SLI-ready systems, the NVIDIA Control Panel now includes SLI controls in the 3D Settings Category task page.

NVIDIA does not recommend testing or benchmarking SLI mode in this driver version. A later driver version will support SLI mode on the top applications.

#### Resolved Issues

See [“Changes in Version 100.54” on page 7](#) for a list of resolved issues.

### Limitations in This Release

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

- **Refresh Rate Precision**

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

- **Pan & Scan**

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

- **Full-featured HDMI Support**

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

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



- **INF Support for Restricted Timings**

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

- **Overscan/Underscan Support**

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

- **Advanced Timings, Custom Resolutions**

This driver does not support adding arbitrary resolutions and timings.

- **Mode Filtering for Custom Policies**

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

- **SDI**

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

- **Genlock/Frame Lock**

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

- **NVIDIA TurboCache**

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

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

- **NVIDIA nView Desktop Manager - Not yet available**

## Features Not Yet Available in the NVIDIA Control Panel

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

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

- **Workstation Category**

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

## Changes in Version 100.54

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The following sections list the changes made and issues resolved since driver version 100.53.

- “New Features” on page 7
- “Fixed Issues–Windows Vista 32-bit” on page 7

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

### New Features

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- **NVIDIA SLI™ Technology**

On SLI-ready systems, the NVIDIA Control Panel now includes SLI controls in the 3D Settings Category task page.

NVIDIA does not recommend testing or benchmarking SLI mode in this driver version. A later driver version will support SLI mode on the top applications.

### Fixed Issues–Windows Vista 32-bit

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- GeForce 8800 GTX: The system reboots intermittently when resuming from sleep modes.

## Changes in Version 100.53

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The following sections list the changes made and issues resolved since driver version 97.46.

- “New Features” on page 8
- “Fixed Issues–Windows Vista 32-bit” on page 9
- “Fixed Issues–Windows Vista 64-bit” on page 9

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

### New Features

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- **Display Rotation**

The NVIDIA Control Panel now includes display rotation controls in the Display Category task page.

- **Change Resolution**

The NVIDIA Control Panel now includes resolution controls in the Display Category task page.

- **Desktop Color Settings Adjustment**

The NVIDIA Control Panel now includes desktop color settings adjustment controls in the Display Category task page.

- **DirectX Antialiasing**

The NVIDIA Control Panel now offers full antialiasing support for DirectX applications.

## **Fixed Issues–Windows Vista 32-bit**

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- 1360x768 resolution is selectable in the OS slider even on DVI panels with a maximum resolution of 1280x1024.
- GeForce 7300GT: The NVIDIA Control Panel cannot set 480p or 575p modes, only 480i or 575i.
- The screen turns blank after enabling rotation in Dualview mode.
- The NVIDIA Control Panel antialiasing does not work.
- GeForce 6100/6150: Digital Dualview display is blank upon resume from system standby.

## **Fixed Issues–Windows Vista 64-bit**

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- The screen turns blank after enabling rotation in Dualview mode.

## Open Issues in Version 100.54

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As with every released driver, version 100.54 of the Release 100 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

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- NVIDIA SLI Technology: NVIDIA does not recommend testing or benchmarking SLI mode in this driver version. A later driver version will support SLI mode on the top applications.
- NVIDIA Control Panel: Application profiles do not work properly on systems with multiple user accounts
- When viewed over component-out, the Media Center interface in full-screen mode flashes when the mouse cursor is moved across the screen.
- NVIDIA Control Panel Desktop Color Settings are not saved after rebooting the system.
- NVIDIA Cascades demo has some sparkle artifacts.
- GeForce 8800 GTX: Dual-link mode high resolutions are not available on the 30" Apple display.
- GeForce 8800 GTX: The display goes blank when connecting an HDTV to the component-out connection.
- GeForce 8800 GTX: HDTV output is black and white.
- GeForce 8800 GTX: S-Video/Composit/Component settings are not saved after closing and then re-opening the NVIDIA Control Panel.
- GeForce 8800 GTX/GTS: Call of Duty 2—Only solid colors appear during gameplay when 4xAA is enabled.
- GeForce 8800 GTX, GeForce 7900 GTX: Company of Heroes crashes when trying to load the Cherbourg level.
- GeForce 7 Series: Serious Sam II shows flash of corruptions when the charecter moves.
- GeForce 7 Series: With TMM enabled, the driver does not detect a hot-plugged VGA (dongle) or DVI connection.
- GeForce 7800 GTX: Civilization 4 does not initialize after enabling AA in the NVIDIA Control Panel

- GeForce 7800 GTX: 30" Apple Cinema does not sync when connected to the top TMDS.
- GeForce 7300: Black & White 2 shows flashing corruption.
- GeForce 6800 GT/Ultra: There is flickering at the bottom of the video when playing MPEG2 HD files.

## **Windows Vista 64-bit Issues**

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- GeForce 8800 GTX: HDTV output is black and white.
- GeForce 8800 GTX: S-Video/Composit/Component settings are not saved after closing and then re-opening the NVIDIA Control Panel.
- NVIDIA Control Panel Desktop Color Settings are not saved after rebooting the system.
- GeForce 7 Series: With TMM enabled, the driver does not detect a hot-plugged VGA (dongle) or DVI connection.
- GeForce 6800 GT/Ultra: There is flickering at the bottom of the video when playing MPEG2 HD files.

## Not NVIDIA Issues

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

### Unsupported Features

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

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

This is an operating system limitation. Vista window manager features will provide new ways of accomplishing overlays, but will require application porting.
- **Overclocking**

GPU overclocking is no longer supported in the default GPU driver control panel. This feature will be available in a separate downloadable utility.
- **GPU Temperature Monitoring**

Temperature monitoring is no longer supported in the default GPU driver control panel. This feature will be available in a separate downloadable utility.
- **AGP Settings Adjustment**
- **Full-screen Video Mirror**
- **Video Zoom**
- **nView Span Modes**
- **Edge Blending**
- **Display/Connection Wizard** (such as was provided with Windows Media Center Edition)
- **DVD/MPEG Extensions** (such as was provided with Windows Media Center Edition)
- **Audio Extensions** (such as was provided with Windows Media Center Edition)
- **Windowed quad-buffered stereo**



This is an operating system limitation.

## OpenGL Application Issues

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

- Mixed GDI and OpenGL rendering does not work.

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

NVIDIA recommends converting GDI rendering to OpenGL.

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

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

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

## Video Performance

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- Be sure to use the latest Windows Vista build to take advantage of NVIDIA's improved video playback performance.
- The default video decoders in Windows Vista do not yet take advantage of hardware acceleration.

## Application Issues

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

*The application is not applying antialiasing properly.*

## Known Product Limitations

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

- “Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards” on page 14
- “Gigabyte GA-6BX Motherboard” on page 14

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

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- **Problem**

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

- **Explanation**

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

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

### Gigabyte GA-6BX Motherboard

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

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

## CHAPTER

## 3

# THE RELEASE 100 DRIVER

This chapter covers the following main topics:

- “Hardware and Software Support” on page 15
- “Driver Installation” on page 19
- “NVIDIA Driver History” on page 20

## Hardware and Software Support

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### Supported Operating Systems

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The Release 100 driver, version 100.54, 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

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Table 3.1 lists the NVIDIA products supported by the Release 100 driver.

**Table 3.1** Supported NVIDIA Products

Consumer Products	Workstation Products
GeForce 8800 GTX	NVIDIA Quadro FX 5500
GeForce 8800 GTS	NVIDIA Quadro FX 5500 SDI
GeForce 7950 GX2	NVIDIA Quadro FX 4500 X2
GeForce 7950 GT	NVIDIA Quadro FX 4500
GeForce 7900 GTX	NVIDIA Quadro FX 4500 SDI
GeForce 7900 GT	NVIDIA Quadro FX 4400
GeForce 7900 GS	NVIDIA Quadro FX 4400G
GeForce 7800 GTX 512	NVIDIA Quadro FX 4000 SDI
GeForce 7800 GTX	NVIDIA Quadro FX 3500
GeForce 7800 GT	NVIDIA Quadro FX 3450
GeForce 7800 GS	NVIDIA Quadro FX 3400
GeForce 7600 GT	NVIDIA Quadro FX 1500
GeForce 7600 LE	NVIDIA Quadro FX 1400
GeForce 7600 GS	NVIDIA Quadro FX 560
GeForce 7500 LE	NVIDIA Quadro FX 550
GeForce 7300 LE	NVIDIA Quadro FX 540
GeForce 7300 GS	NVIDIA Quadro NVS 285
GeForce 7300 GT	NVIDIA Quadro NVS 440
GeForce 7300 SE	
GeForce 7100 GS	
GeForce 6800 XT	
GeForce 6800 XE	
GeForce 6800 Ultra	
GeForce 6800 LE	
GeForce 6800 GT	
GeForce 6800 LE	
GeForce 6800 GS	
GeForce 6800	
GeForce 6700 XL	
GeForce 6610 XL	
GeForce 6600 VE	
GeForce 6600 LE	
GeForce 6600 GT	
GeForce 6600	
GeForce 6500	

**Table 3.1** Supported NVIDIA Products (continued)

<b>Consumer Products</b>	<b>Workstation Products</b>
GeForce 6200SE with TurboCache	
GeForce 6200 with TurboCache	
GeForce 6200 LE	
GeForce 6200	
GeForce 6150 LE	
GeForce 6150	
GeForce 6100	
GeForce 6100 nForce 400	
GeForce 6100 nForce 405	
GeForce 6100 nForce 420	

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## Supported Languages

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The Release 100 ForceWare Graphics Drivers supports the following languages in the main driver Control Panel:

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

# Driver Installation

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## Minimum Hard Disk Space

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

## Installation Instructions

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

## NVIDIA Driver History

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Release 100 is the latest NVIDIA driver available. [Table 3.1](#) contains a summary of some previous driver releases and the versions associated with them. Some versions listed may not have been released outside of NVIDIA.

**Table 3.1** NVIDIA Drivers for Windows Vista

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

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## A P P E N D I X



## MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 100 driver for NVIDIA products. It contains these sections:

- “General Mode Support Information” on page 22
- “Default Modes Supported by GPU” on page 23
- “Modes Supported by DACs and TV Encoders” on page 29

## General Mode Support Information

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The NVIDIA graphics driver includes a standard list of display modes that are supported by default. These modes are listed in the section “[Default Modes Supported by GPU](#)” on page 23.

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

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

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

Display	Maximum Resolution	Hardware Requirements
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz	<ul style="list-style-type: none"> <li>All high-end NVIDIA Quadro FX graphic solutions.</li> <li>All GeForce 7 series GPUs</li> <li>GeForce 6800 Ultra 512</li> <li>GeForce 6800 with 512 MB</li> </ul>
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	<ul style="list-style-type: none"> <li>All High-end NVIDIA Quadro FX graphic solutions.</li> <li>All GeForce 7 series GPUs</li> <li>GeForce 6800 Ultra 512</li> <li>GeForce 6800 with 512 MB</li> </ul>

**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:

- “GeForce 7 Series, GeForce 6 Series, and NVIDIA Quadro FX Family of High End GPUs” on page 24

### Understanding the Mode Format

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

Resolution	Color Depth	Refresh Rates
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**Example entry:** 1024 x 768 32 60 70 72 75 85 100 120 140 144 150 170 200

<b>Meaning:</b>	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, GeForce 6 Series, and NVIDIA Quadro FX Family of High End GPUs**

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

- NVIDIA GeForce 8800 GTX/ GTS
- NVIDIA GeForce 7950 GX2 /GT
- NVIDIA GeForce 7900 GS / GT / GTX
- NVIDIA GeForce 7800 GS / GT / GTX / GTX 512
- NVIDIA GeForce 7600 GT / GS
- NVIDIA GeForce 7500 LE
- NVIDIA GeForce 7300 GS / LE / GT / SE
- NVIDIA GeForce 6800 GT / GS / LE / XT/ XE
- NVIDIA GeForce 6800 Ultra
- NVIDIA GeForce 6800
- NVIDIA GeForce 6700 XL
- NVIDIA GeForce 6610 XL
- NVIDIA GeForce 6600 GT / LE / VE
- NVIDIA GeForce 6600
- NVIDIA GeForce 6500
- NVIDIA GeForce 6200 LE
- NVIDIA GeForce 6200 w/TurboCache™
- NVIDIA GeForce 6200SE w/TurboCache™
- NVIDIA GeForce 6200
- NVIDIA GeForce 6150
- NVIDIA GeForce 6150 LE
- NVIDIA GeForce 6100
- NVIDIA Quadro FX 4500 X2
- NVIDIA Quadro FX 4500
- NVIDIA Quadro FX 3500
- NVIDIA Quadro FX 3400 / Quadro FX 4400
- NVIDIA Quadro FX 3450 / Quadro FX 4000 SDI

- NVIDIA Quadro FX 1400
- NVIDIA Quadro FX 3000 / Quadro FX 1300
- NVIDIA Quadro FX 700
- NVIDIA Quadro FX 600
- NVIDIA Quadro FX 560
- NVIDIA Quadro FX 550
- NVIDIA Quadro FX 540
- NVIDIA Quadro NVS 440
- NVIDIA Quadro NVS 285

## Standard Modes

320 x 200	8		60 70 72 75
320 x 240	8		60 70 72 75
400 x 300	8		60 70 72 75
480 x 360	8		60 70 72 75
512 x 384	8		60 70 72 75
640 x 400	8		60 70 72 75
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
1088 x 612	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
1600 x 900	8		60 70 72 75 85 100 120 140 144 150
1600 x 1024	8		60 70 72 75 85 100 120
1600 x 1200	8		60 70 72 75 85 100 120
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
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320 x 200	16		60 70 72 75
320 x 240	16		60 70 72 75
400 x 300	16		60 70 72 75
480 x 360	16		60 70 72 75
512 x 384	16		60 70 72 75
640 x 400	16		60 70 72 75
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				
1088 x 612	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						
1600 x 900	16		60	70	72	75	85	100	120	140	144	150							
1600 x 1024	16		60	70	72	75	85	100	120										
1600 x 1200	16		60	70	72	75	85	100	120										
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												

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320 x 200	32		60	70	72	75													
320 x 240	32		60	70	72	75													
400 x 300	32		60	70	72	75													
480 x 360	32		60	70	72	75													
512 x 384	32		60	70	72	75													
640 x 400	32		60	70	72	75													
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					
1088 x 612	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						
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
1600 x 900	32		60 70 72 75 85 100 120
1600 x 1024	32		60 70 72 75 85 100
1600 x 1200	32		60 70 72 75 85 100
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



## Modes Supported by DACs and TV Encoders

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

- “External DAC Mode Support” on page 29
- “TV-Out Mode Support” on page 30

### External DAC Mode Support

#### Fairchild FMS3815 Modes Supported

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

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

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

#### Analog Devices ADV-7123 Modes Supported

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

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

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

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

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

## TV-Out Mode Support

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

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

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

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

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

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