Release 179 Graphics Drivers

Release Notes

Version 179.28

for Windows XP

NVIDIA Corporation

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CHAPTER 1

INTRODUCTION TO *RELEASE NOTES*

This edition of *Release Notes* describes the Release 179 Graphics Drivers for Microsoft® Windows® Vista. NVIDIA provides these notes to describe performance improvements and bug fixes in each documented version of the driver.

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

Structure of the Document

This document is organized in the following sections:

- "Changes in the Release 179 Driver for Windows XP" on page 2 gives a summary of changes, and fixed and open issues in this version.
- "The Release 179 Driver for Windows XP" on page 11 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 19 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release Notes* for Windows XP includes information about NVIDIA graphics driver version 179.28.

CHAPTER 2

CHANGES IN THE RELEASE 179 DRIVER FOR WINDOWS XP

This chapter describes open issues for version 179.28, and resolved issues and driver enhancements for versions of the Release 179 driver up to version 179.28. The chapter contains these sections:

Version 179.28 Highlights

This section provides highlights of version 179.28 of the NVIDIA Release 179 Driver.

What's New in Release 179

- This is a beta driver for Quadro NVS series and GeForce 8M and 9M series notebook GPUs.

  Some notebooks are not supported by this release. Refer to the "Supported NVIDIA Products" on page 12 for the list of supported GPUs and notebooks.

  Hybrid SLI notebooks are not supported in this driver, but will be supported in an upcoming release.

- Supports NVIDIA CUDA technology.
- Supports NVIDIA PhysX hardware acceleration on GeForce 8M and 9M GPUs with a minimum of 256MB dedicated graphics memory (this driver package installs NVIDIA PhysX System Software v8.09.04).
- Supports single GPU and NVIDIA SLI technology on DirectX 9 and OpenGL.
- Supports Folding@home distributing computing application. Download the high performance client for NVIDIA GPUs in the GeForce Plus Pack and join the NVIDIA team: #131015.

Open Windows XP Issues in Version 179.28

As with every released driver, version 179.28 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 XP 32-bit Issues" on page 4

Windows XP 32-bit Issues

NVIDIA Issues—Single-GPU

- GeForce 8800M GTX: On TV-out, using the Adjust screen size & position page to move the screen to the right does not work after first reducing the size and moving to the left. [479061]

NVIDIA Issues—Multi-GPU

- [SLI], GeForce 9700M GTS: With SLI mode enabled and the DVI connected and set as the SLI display, changes to the Digital Vibrance settings are applied to the LVDS when the LVDS is set as the SLI display. [487211]

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:

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.

More Monitors are Listed in the Windows Device Manager than are Actually Connected

- **Problem**

  Many monitors are listed in the Windows Device Manager hardware tree even when only a few are actually connected or enabled.

- **Explanation**

  NVIDIA chooses to expose all potential monitors even though they are not yet connected. Such an implementation makes multiple device handling easier in

certain situations, such as when a user unplugs a monitor and plugs another one in at a different port.

The only impact is a cosmetic in the plug-and-play manager. There is no functional impact at all and the GDI is not aware of the multiple monitor listing.

DirectX Fails When Detaching/Reattaching Displays in Dualview Mode

This problem can be duplicated as follows:

1. Enable both displays in Dualview mode.
2. Detach monitor 2 and apply settings.
3. Reattach monitor 2 and apply settings.

   DirectX runtime fails on monitor 1.

This is not an NVIDIA bug, but a limitation in the operating system where DirectX does not enumerate the second device. DirectX can be restored to both displays by rebooting the system

OpenGL Viewport Scaling Problem in Horizontal Span Mode

With nView Horizontal Span mode enabled, when opening an OpenGL model in a viewport, the model image is scaled too large to fit in the viewport. The problem occurs with such applications as Maya 5.0 and 3D Studio MAX 4.26.

This is not an NVIDIA bug, but a limitation in the application's ability to properly maintain the aspect ratio in Horizontal Span mode.

Video Playback in nView Clone and Span Modes

- **Problem**

  With nView Clone or Span mode enabled, video playback appears on only one display under the following conditions:

  - Under nView Clone mode, when full-screen video mirror is not used.
  - Under nView Span mode, when full-screen video mirror is not used and the video is positioned to span across both monitors.

- **Explanation**

  With applications that render using the hardware overlay—such as DirectX applications—the default driver behavior is to enable the hardware overlay when nView Clone or Span mode is enabled.

  Because the driver supports only one hardware overlay, the video appears on only one display.

Applying Workstation Application Profiles

- **Application Profiles Should be Used**

  The workstation application profiles are software settings used by the NVIDIA Display Drivers to provide optimum performance when using a selected application. The profile also works around known application issues and bugs.

  If there is an available setting for an application, it should be used, otherwise incorrect behavior or reduced performance is likely to occur.

- **Applying Application Profiles**

  If you make a configuration change while the application is open, you must exit and then re-open the application for the change to take effect.

  When an application is running it does not receive notification of configuration changes.

No Antialiasing of 3DMark03 Image Quality Screen Captures

- **Problem**

  After enabling antialiasing from the NVIDIA Properties page, 3DMark03 screen captures—obtained using the application's screen capture function—might not be antialiased.

- **Explanation**

  This is not an NVIDIA bug, but rather a result of different methods used to render antialiased images.

  Depending on a combination of factors, the driver may take advantage of the NVIDIA hardware's ability to bypass the front buffer while rendering an antialiased image. In this case, the front buffer does not contain antialiased data, so if an application takes data from the front buffer—as is the case with 3DMark03's Image Quality screen captures—then the resulting image is not antialiased.

  To accommodate applications that request use of the front buffer, the NVIDIA software can provide the antialiased data in a buffer to the application. Since this negates the advantages of the NVIDIA hardware capability, this support is enabled only when antialiasing is enabled within the application, and not from the NVIDIA control panel.

  In all cases when antialiasing is enabled, screen images as well as screen captures obtained using the Print Screen key are always antialiased.

Medal of Honor Under Windows XP / Windows 2000

- **Problem**

  The Electronic Arts game Medal of Honor uses a hard coded buffer to parse the OpenGL extension string. This can cause a system crash under Windows XP and Windows 2000.

- **Workaround**

  NVIDIA has implemented Medal of Honor application detection to work around this extension string crash.

Windows XP/2000 Issue with Settings Tab Monitor Positioning

- **Problem**

  In the Windows **Display Properties > Settings** tab, the secondary monitors cannot be positioned directly above monitor #1 without snapping horizontally to a position diagonal to monitor #1.

- **When the Problem Occurs**

  The problem occurs when four monitors are connected to the graphics adapter card, but only two of them are enabled.

- **Cause and Workaround**

  This is a Microsoft—not an NVIDIA—bug, and there is no workaround to correct the positioning of the monitor icons. However, the actual positioning of the displays on the desktop can be corrected using the nView Desktop Manager window as follows:

  1. Under the Tools tab in the Desktop Manager windows, make sure Automatically Align Displays is checked.
  2. In the Settings tab, position the appropriate monitor icon above monitor #1, then click **Apply**.

     The mouse cursor movement between monitor desktops will correspond to a vertical orientation of the monitors, even though the monitor icons in the Settings tab are diagonal to each other.

  Note: This will be the case even if the monitor icons are deliberately positioned diagonal to each other.

Antialiasing Problems With Certain Applications

Antialiasing in the NVIDIA Direct3D driver requires each new frame to be rendered from scratch. This requirement adversely affects applications that render only that portion of the content that has changed since the last frame. A common symptom of this problem is geometric structures that incorrectly disappear and re-appear as the scene shifts.

Poor Quality S-Video Output on Some TVs

NVIDIA drivers differentiate an S-video TV from a composite TV by searching for 75-Ohm loads on the chrominance and luminance lines. If the driver detects only one such load, it assumes that it has a composite TV and drives both chroma and luma onto that line. This approach allows both types of TV to display in color.

Unfortunately, some S-video TVs do not apply the correct load to both lines, causing the driver to detect an S-video TV as a composite. The driver, in turn, sends the lower quality signal to the S-video TV. To work around this problem, use the Control Panel to override the **Auto-select** feature. This can be done following these steps:

1. In the **Settings** tab of the **Display Properties** Control Panel, click **Advanced**.
2. In the **nView** tab, click **Device Settings** and click **Select Output Device**.
3. In the **Device Selection** tab, click the **TV** option.
4. Change the **Video output format** to **S-video**.

AGP and PCI-E Programs May Hang With AMD K7 and K8 Processors

- **Issue**

  Microsoft® Windows® 2000 and Windows XP systems using AMD K7 and K8 processors can hang when an AGP or PCI-E program is used.

- **Root Cause**

  There is a known problem with Microsoft® Windows® 2000 and Windows XP systems using AMD K7 and K8 CPUs that results in the Microsoft operating system allocating overlapping 4M cached pages with 4k write-combined pages. This condition results in undefined behavior and data corruption, and is explicitly disallowed by the AMD CPU manual.

  This problem can affect any device driver in the system that allocates write-combined system memory, but is usually most easily reproduced with graphics drivers since graphics drivers generally make heavy use of write-combined system memory for performance reasons.

- **Resolution**

  Microsoft has a knowledge base article on the issue, the text of which is unfortunately quite outdated. While the article only mentions Windows 2000, AGP, and K7, both the root cause and resolution also apply to Windows 2000 or Windows XP, AGP or PCI-E, and AMD K7 or K8. The article can be found at http://support.microsoft.com/?id=270715.

  The issue is resolved by applying an operating system registry key as described in the referenced article that instructs the Microsoft operating system to not use the 4M pages, thus avoiding the conflict.

  The registry key is automatically applied by installation of the latest NVIDIA nForce platform driver package (including 4.57 SMBUS or later). It is imperative for the package to be installed or for the registry key to be applied before the NVIDIA graphics driver or any other device drivers are installed. The registry key takes effect only after an operating system reboot.

Desktop Manager Does Not Re-Center Logon Screen

On Windows XP multi-display systems that are set to nView Span mode, the Windows logon screen is centered on the extended desktop. This usually causes it to be split across two displays, which users may find annoying. Although users can normally use the Desktop Manager to restrict a window's appearance to one display, security restrictions in the operating systems prevent this in the case of the logon screen.

Issues with Video Mirror–Windows XP/2000

Table 2.1 lists current known issues with NVIDIA Video Mirror functionality.

Table 2.1 Known Issues with Video Mirror

Video Mirror is not yet implemented for applications using Video Port Extensions (VPE).
If Video Mirror is enabled but a full-screen display does not appear, one of the following problems may have occurred:
Video Mirror can only function when overlay is being used. The video player may not be able to create an overlay if another application is using the overlay, or the desktop display resolution is too high. You can lower the desktop resolution, pixel depth, or refresh rate.
Video Mirror requires some extra memory to run. Try closing other DirectX or OpenGL applications that may be running.
You may need to close and restart your video application for Video Mirror enabling or disabling to take effect.
Some video players that cannot detect the presence of Video Mirror stop playing if they are minimized or completely obscured by another window. For example, Media Player can exhibit this problem.

CHAPTER 3

THE RELEASE 179 DRIVER FOR WINDOWS XP

This chapter covers the following main topics:

Hardware and Software Support

Supported Operating Systems

This Release 179 driver includes drivers designed for the following Microsoft® operating systems:

- Microsoft Windows® XP
  - Windows XP Media Center Edition 2005 Update Rollup2
  - Windows XP Media Center Edition 2005
  - Windows XP Media Center Edition 2004
  - Windows XP Professional
  - Windows XP Home Edition
  - Windows XP Professional x64 Edition

Supported NVIDIA Products

Supported GeForce GPUs

Table 3.1 lists the NVIDIA products supported by the Release 179 driver, version 179.28

Table 3.1 Supported NVIDIA GeForce Products

Product	Windows XP 32-bit	Windows XP Professional x64
GeForce 9800M GTX	X	X
GeForce 9800M GTS	X	X
GeForce 9800M GT	X	X
GeForce 9800M GS	X	X
GeForce 9700M GTS	X	X
GeForce 9700M GT	X	X
GeForce 9650M GT	X	X
GeForce 9650M GS	X	X
GeForce 9600M GT	X	X
GeForce 9600M GS	X	X
GeForce 9500M GS	X	X
GeForce 9500M G	X	X
GeForce 9300M GS	X	X
GeForce 9300M G	X	X
GeForce 9200M GS	X	X
GeForce 9200M GE	X	X
GeForce 8800M GTX	X	X
GeForce 8800M GTS	X	X
GeForce 8800M GS	X	X
GeForce 8700M GT	X	X
GeForce 8600M GT	X	X
GeForce 8600M GS	X	X
GeForce 8400M GT	X	X
GeForce 8400M GS	X	X
GeForce 8400M G	X	X
GeForce 8200M G	X	X

The driver supports notebooks based on the GPUs listed in Table 3.1. However, the following notebooks are ***not*** supported in this release:

- Hybrid SLI notebooks (these notebooks will be supported in an upcoming release):
  - **Acer Aspire 7530**
  - **BenQ Joybook S42**
  - **Fujitsu Siemens Amilo Xi 3650**

  - **MSI EX630**
  - **Qosmio X305-Q706**
  - **Qosmio X305-Q708**

- **Dell Vostro** notebooks (please contact the notebook OEM for driver support for these notebooks)
- **Lenovo ThinkPad** notebooks (please contact the notebook OEM for driver support for these notebooks)
- **Sony VAIO** notebooks (please contact the notebook OEM for driver support for these notebooks)

Supported NVIDIA Quadro NVS GPUs

Table 3.2 lists the NVIDIA products supported by the Release 179 driver, version 179.28

Table 3.2 Supported NVIDIA Quadro NVS Products

Product	Windows XP 32-bit	Windows XP Professional x64
Quadro NVS 320M	X	X
Quadro NVS 310M	X	X
Quadro NVS 160M	X	X
Quadro NVS 150M	X	X
Quadro NVS 140M	X	X
Quadro NVS 135M	X	X
Quadro NVS 130M	X	X

The driver supports notebooks based on the GPUs listed in Table 3.2. However, the following notebooks are ***not*** supported in this release:

- **Dell Latitude** notebooks (please contact the notebook OEM for driver support for these notebooks)
- **Lenovo ThinkPad** notebooks (please contact the notebook OEM for driver support for these notebooks)

Supported Languages

The Release 179 Release 179 Graphics supports the following languages in the main driver Control Panel:

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

Driver Installation

System Requirements

The hard disk space requirement is minimum 141 MB.

Installation Instructions

Before You Begin

- Check to make sure that your notebook has a supported GPU and is not listed in the exclusion list (see "Supported NVIDIA Products" on page 12).
- It is recommended that you back up your current system configuration.
- If you own a Dell Inspiron 1420, Dell XPS M1330, or Dell XPS M1530 it is highly recommended that you first install this Dell software update.
- **If NVIDIA nTune is already installed**

  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 nTune.
- If you do not have System Administrator access privileges, it is assumed that the appropriate person with System Administrator access in your organization will set up and install the NVIDIA graphics driver software on your computer.
- The installation process copies all necessary files for operation into the appropriate directories.
- The nView system files are copied to your **`Windows\System`** directory.
- nView Desktop Manager Profile files (*.**tvp**) are saved in the **`Windows\Nview`** directory.

  Depending on the version of the NVIDIA driver previously installed, profiles may also be located in the **`Documents and Settings\All Users\Application Data\nView_Profiles`** directory.
- As part of the install process, an uninstall is registered in your system.
- Under Windows XP, the NVIDIA driver is installed in "Dualview mode" display. However, note that the second display is not activated by default, but must be enabled.

Preserving Settings Before Upgrading Your Software

Before uninstalling or installing software, your can preserve your nView Desktop Manager and/or NVIDIA Display settings by using the nView Desktop Manager Profiles features.

Note: Follow the steps below and/or refer to the *NVIDIA nView Desktop Manager User's Guide* for details. Under Windows XP/2000 and Windows NT 4.0, you must have, at least, **Power User** access privileges in order to create or save a profile. (Refer to Windows Help if you need an explanation of Power User access rights.)

Follow the steps below and/or refer to the *NVIDIA nView Desktop Manager User's Guide* for details.

1. Open the nView Desktop Manager Profiles page (Figure 4.1).
2. To preserve your current settings, you can use either the **Save** or the **New** option from the nView Desktop Manager Profiles page:
   - If you want to overwrite the currently loaded profile with your changed settings, use the **Save** option. Notice that a warning message indicates that you are about to overwrite the selected profile.
   - If you want to retain the currently loaded profile and want to save your changed settings to a new file, click the **New** option. Enter a name and description of the profile in the New Profile dialog box. For example, you can name this profile **`My Settings`**.
3. If you are an "advanced" user and want to customize certain settings in the saved profile, click **Advanced** << to expand the dialog box (Figure 4.2).
4. To customize the settings, you can select or clear any of the settings check boxes.
5. Click **Save** to return to the main Profiles page.

   If you created a new profile, you will see the name of the newly created profile in the profiles list.

   If you overwrote a current profile, the same profile name is retained in the list.

   Note: nView Desktop Manager profile (**`.tvp`**) files are saved in the **`Windows\nView`** directory. Depending on the version of the NVIDIA driver previously installed, profiles may also be saved in the **`Documents and Settings\All Users\Application Data\ nView_Profiles`** directory.
6. Now you can uninstall your current driver for a driver upgrade.
7. After you restart your computer following an NVIDIA new driver install, you can easily load the saved profile from the Profiles page of nView Desktop Manager.

About Using Saved Profiles in Another Computer

You can easily use any saved profile (**`.tvp`** file in the **`Windows\nView`** directory) from one computer and use it in another computer, if you want. You'll need to copy it to the **`Windows\nView`** directory of a computer that has the NVIDIA ForceWare graphics display driver, etc. installed properly. Then this profile can be loaded from another computer from the nView Desktop Manager Profiles page just as it can from your original computer.

Uninstalling the NVIDIA Display Driver Software

Note: *It is highly recommended that you follow the steps in this section to completely uninstall the NVIDIA Display Driver software before updating to a new version of the software.*

To uninstall the nView software, follow these steps:

1. From the Windows taskbar, click **Start** > **Settings** > **Control Panel** to open the Control Panel window.
2. Double-click the **Add/Remove Programs** item.
3. Click the **NVIDIA Display Driver** item from the list.
4. Click **Change/Remove**.
5. Click **Yes** to continue.

   A prompt appears asking whether you want to delete all of the saved nView profiles.

   - If you click **Yes**, all of the nView software and all of your saved profiles will be deleted.
   - If you click **No**, the nView software is removed, but the profile files are saved in the `Windows\nView` directory on your hard disk.

   Your system now restarts.

Installing the NVIDIA ForceWare Graphics Drivers

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.

APPENDIX

A

MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 179 driver for NVIDIA products. It contains these sections:

General Mode Support Information

The NVIDIA graphics driver includes a standard list of display modes that are supported by default. These modes are listed in the section "Default Modes Supported by GPU for Windows XP" on page 21.

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

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

Table A.1 Modes Supported for High Resolution Displays

Display	Maximum Resolution	Hardware Requirements
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz	• All GeForce 7 series GPUs and later • GeForce 6800 Ultra 512 • GeForce 6800 with 512 MB
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	
HP LP3065 dual-link DVI flat panel	2560x1600 @ 60Hz.	

Table A.2 Non-standard Modes Supported

Resolution
1680 x 1050
1366 x 768

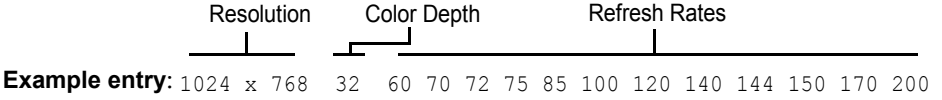
Default Modes Supported by GPU for Windows XP

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

- "GeForce 9M Series, GeForce 8M Series, and Quadro NVS Series GPUs" on page 22

Understanding the Mode Format

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



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

Figure A.1 Mode Format

Note:

- Horizontal spanning modes of 3840x1080 and above, and vertical spanning modes of 1920x2160 and above generally require at least 32 MB of video memory at 32 bpp.
- An "i" next to the refresh rate indicates an interlaced refresh rate.

GeForce 9M Series, GeForce 8M Series, and Quadro NVS Series GPUs

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

- NVIDIA GeForce 9800M GTX
- NVIDIA GeForce 9800M GTS
- NVIDIA GeForce 9800M GT
- NVIDIA GeForce 9800M GS
- NVIDIA GeForce 9700M GTS
- NVIDIA GeForce 9700M GT
- NVIDIA GeForce 9650M GT
- NVIDIA GeForce 9650M GS
- NVIDIA GeForce 9600M GT
- NVIDIA GeForce 9600M GS
- NVIDIA GeForce 9500M GS
- NVIDIA GeForce 9500M G
- NVIDIA GeForce 9300M G
- NVIDIA GeForce 9300M GS
- NVIDIA GeForce 9300M GS
- NVIDIA GeForce 9200M GS
- NVIDIA GeForce 8800M GTS
- NVIDIA GeForce 8800M GTX
- NVIDIA GeForce 8700M GT
- NVIDIA GeForce 8600M GT
- NVIDIA GeForce 8600M GS
- NVIDIA GeForce 8400M GT
- NVIDIA GeForce 8400M GS
- NVIDIA GeForce 8400M G
- NVIDIA GeForce 8200M G
- NVIDIA Quadro NVS 320M
- NVIDIA Quadro NVS 160M

- NVIDIA Quadro NVS 150M
- NVIDIA Quadro NVS 140M
- NVIDIA Quadro NVS 135M
- NVIDIA Quadro NVS 130M

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 85 100 120
 640 x  480   8   60 70 72 75 85 100 120
 720 x  480   8   60 70 72 75 85 100 120
 720 x  576   8   60
 800 x  600   8   60 70 72 75 85 100 120
1024 x  768   8   60 70 72 75 85 100 120
1088 x  612   8   60 70 72 75 85 100 120
1152 x  768   8   60 70 72 75 85 100 120
1152 x  864   8   60 70 72 75 85 100 120
1280 x  720   8   60 70 72 75 85 100 120
1280 x  768   8   60 70 72 75 85 100 120
1280 x  800   8   60 70 72 75 85 100 120
1280 x  854   8   60 70 72 75 85 100 120
1280 x  960   8   60 70 72 75 85 100 120
1280 x 1024   8   60 70 72 75 85 100 120
1400 x 1050   8   60 70 72 75 85 100
1600 x  900   8   60 70 72 75 85 100
1600 x 1024   8   60 70 72 75 85 100
1600 x 1200   8   60 70 72 75 85 100
1920 x 1080   8   60 70 72 75 85 100
1920 x 1200   8   60 70 72 75 85
1920 x 1440   8   60 70 72 75 85
2048 x 1536   8   60 70 72 75 85
--------------------------------------------------------------------
 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 85 100 120
 640 x  480  16   60 70 72 75 85 100 120
 720 x  480  16   60 70 72 75 85 100 120
 720 x  576  16   60
 800 x  600  16   60 70 72 75 85 100 120
1024 x  768  16   60 70 72 75 85 100 120
1088 x  612  16   60 70 72 75 85 100 120
1152 x  768  16   60 70 72 75 85 100 120
1152 x  864  16   60 70 72 75 85 100 120
1280 x  720  16   60 70 72 75 85 100 120
1280 x  768  16   60 70 72 75 85 100 120
1280 x  800  16   60 70 72 75 85 100 120
1280 x  854  16   60 70 72 75 85 100 120
1280 x  960  16   60 70 72 75 85 100 120
1280 x 1024  16   60 70 72 75 85 100 120
1400 x 1050  16   60 70 72 75 85 100
1600 x  900  16   60 70 72 75 85 100
1600 x 1024  16   60 70 72 75 85 100
1600 x 1200  16   60 70 72 75 85 100
1920 x 1080  16   60 70 72 75 85 100
1920 x 1200  16   60 70 72 75 85
1920 x 1440  16   60 70 72 75 85
2048 x 1536  16   60 70 72 75 85
--------------------------------------------------------------------
 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 85 100 120
 640 x  480  32   60 70 72 75 85 100 120
 720 x  480  32   60 70 72 75 85 100 120
 720 x  576  32   60
 800 x  600  32   60 70 72 75 85 100 120
1024 x  768  32   60 70 72 75 85 100 120
1088 x  612  32   60 70 72 75 85 100 120
```

1152 x	768	32	60	70	72	75	85	100 120
1152 x	864	32	60	70	72	75	85	100 120
1280 x	720	32	60	70	72	75	85	100 120
1280 x	768	32	60	70	72	75	85	100 120
1280 x	800	32	60	70	72	75	85	100 120
1280 x	854	32	60	70	72	75	85	100 120
1280 x	960	32	60	70	72	75	85	100 120
1280 x 1024		32	60	70	72	75	85	100 120
1400 x 1050		32	60	70	72	75	85	
1600 x	900	32	60	70	72	75	85	
1600 x 1024		32	60	70	72	75	85	
1600 x 1200		32	60	70	72	75	85	
1920 x 1080		32	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	

Horizontal Spanning Modes

1280 x	480	8	60	70	72	75	85	100 120
1440 x	480	8	60	70	72	75	85	100 120
1440 x	576	8	60					
1600 x	600	8	60	70	72	75	85	100 120
2048 x	768	8	60	70	72	75	85	100 120
2176 x	612	8	60	70	72	75	85	100 120
2304 x	768	8	60	70	72	75	85	100 120
2304 x	864	8	60	70	72	75	85	100 120
2560 x	720	8	60	70	72	75	85	100 120
2560 x	768	8	60	70	72	75	85	100 120
2560 x	800	8	60	70	72	75	85	100 120
2560 x	854	8	60	70	72	75	85	100 120
2560 x	960	8	60	70	72	75	85	100 120
2560 x 1024		8	60	70	72	75	85	100 120
2800 x 1050		8	60	70	72	75	85	100
3200 x	900	8	60	70	72	75	85	100
3200 x 1024		8	60	70	72	75	85	100
3200 x 1200		8	60	70	72	75	85	100
3840 x 1080		8	60	70	72	75	85	100

```
3840 x 1200   8   60 70 72 75 85
3840 x 1440   8   60 70 72 75 85
4096 x 1536   8   60 70 72 75 85
-------------------------------------------------------------------
1280 x  480  16   60 70 72 75 85 100 120
1440 x  480  16   60 70 72 75 85 100 120
1440 x  576  16   60
1600 x  600  16   60 70 72 75 85 100 120
2048 x  768  16   60 70 72 75 85 100 120
2176 x  612  16   60 70 72 75 85 100 120
2304 x  768  16   60 70 72 75 85 100 120
2304 x  864  16   60 70 72 75 85 100 120
2560 x  720  16   60 70 72 75 85 100 120
2560 x  768  16   60 70 72 75 85 100 120
2560 x  800  16   60 70 72 75 85 100 120
2560 x  854  16   60 70 72 75 85 100 120
2560 x  960  16   60 70 72 75 85 100 120
2560 x 1024  16   60 70 72 75 85 100 120
2800 x 1050  16   60 70 72 75 85 100
3200 x  900  16   60 70 72 75 85 100
3200 x 1024  16   60 70 72 75 85 100
3200 x 1200  16   60 70 72 75 85 100
3840 x 1080  16   60 70 72 75 85 100
3840 x 1200  16   60 70 72 75 85
3840 x 1440  16   60 70 72 75 85
4096 x 1536  16   60 70 72 75 85
-------------------------------------------------------------------
1280 x  480  32   60 70 72 75 85 100 120
1440 x  480  32   60 70 72 75 85 100 120
1440 x  576  32   60
1600 x  600  32   60 70 72 75 85 100 120
2048 x  768  32   60 70 72 75 85 100 120
2176 x  612  32   60 70 72 75 85 100 120
2304 x  768  32   60 70 72 75 85 100 120
2304 x  864  32   60 70 72 75 85 100 120
2560 x  720  32   60 70 72 75 85 100 120
2560 x  768  32   60 70 72 75 85 100 120
2560 x  800  32   60 70 72 75 85 100 120
2560 x  854  32   60 70 72 75 85 100 120
```

```
2560 x  960  32   60 70 72 75 85 100 120
2560 x 1024  32   60 70 72 75 85 100 120
2800 x 1050  32   60 70 72 75 85
3200 x  900  32   60 70 72 75 85
3200 x 1024  32   60 70 72 75 85
3200 x 1200  32   60 70 72 75 85
3840 x 1080  32   60 70 72 75 85
3840 x 1200  32   60 70 72 75 85
3840 x 1440  32   60 70 72 75 85
4096 x 1536  32   60 70 72 75 85
```

Vertical Spanning Modes

```
 640 x  960   8   60 70 72 75 85 100 120
 720 x  960   8   60 70 72 75 85 100 120
 720 x 1152   8   60
 800 x 1200   8   60 70 72 75 85 100 120
1024 x 1536   8   60 70 72 75 85 100 120
1088 x 1224   8   60 70 72 75 85 100 120
1152 x 1536   8   60 70 72 75 85 100 120
1152 x 1728   8   60 70 72 75 85 100 120
1280 x 1440   8   60 70 72 75 85 100 120
1280 x 1536   8   60 70 72 75 85 100 120
1280 x 1600   8   60 70 72 75 85 100 120
1280 x 1708   8   60 70 72 75 85 100 120
1280 x 1920   8   60 70 72 75 85 100 120
1280 x 2048   8   60 70 72 75 85 100 120
1400 x 2100   8   60 70 72 75 85 100
1600 x 1800   8   60 70 72 75 85 100
1600 x 2048   8   60 70 72 75 85 100
1600 x 2400   8   60 70 72 75 85 100
1920 x 2160   8   60 70 72 75 85 100
1920 x 2400   8   60 70 72 75 85
1920 x 2880   8   60 70 72 75 85
2048 x 3072   8   60 70 72 75 85
-----------------------------------------------------------------
 640 x  960  16   60 70 72 75 85 100 120
 720 x  960  16   60 70 72 75 85 100 120
```

```
 720 x 1152  16   60
 800 x 1200  16   60 70 72 75 85 100 120
1024 x 1536  16   60 70 72 75 85 100 120
1088 x 1224  16   60 70 72 75 85 100 120
1152 x 1536  16   60 70 72 75 85 100 120
1152 x 1728  16   60 70 72 75 85 100 120
1280 x 1440  16   60 70 72 75 85 100 120
1280 x 1536  16   60 70 72 75 85 100 120
1280 x 1600  16   60 70 72 75 85 100 120
1280 x 1708  16   60 70 72 75 85 100 120
1280 x 1920  16   60 70 72 75 85 100 120
1280 x 2048  16   60 70 72 75 85 100 120
1400 x 2100  16   60 70 72 75 85 100
1600 x 1800  16   60 70 72 75 85 100
1600 x 2048  16   60 70 72 75 85 100
1600 x 2400  16   60 70 72 75 85 100
1920 x 2160  16   60 70 72 75 85 100
1920 x 2400  16   60 70 72 75 85
1920 x 2880  16   60 70 72 75 85
2048 x 3072  16   60 70 72 75 85
--------------------------------------------------------------------
 640 x  960  32   60 70 72 75 85 100 120
 720 x  960  32   60 70 72 75 85 100 120
 720 x 1152  32   60
 800 x 1200  32   60 70 72 75 85 100 120
1024 x 1536  32   60 70 72 75 85 100 120
1088 x 1224  32   60 70 72 75 85 100 120
1152 x 1536  32   60 70 72 75 85 100 120
1152 x 1728  32   60 70 72 75 85 100 120
1280 x 1440  32   60 70 72 75 85 100 120
1280 x 1536  32   60 70 72 75 85 100 120
1280 x 1600  32   60 70 72 75 85 100 120
1280 x 1708  32   60 70 72 75 85 100 120
1280 x 1920  32   60 70 72 75 85 100 120
1280 x 2048  32   60 70 72 75 85 100 120
1400 x 2100  32   60 70 72 75 85
1600 x 1800  32   60 70 72 75 85
1600 x 2048  32   60 70 72 75 85
1600 x 2400  32   60 70 72 75 85
```

```
1920 x 2160  32   60 70 72 75 85
1920 x 2400  32   60 70 72 75 85
1920 x 2880  32   60 70 72 75 85
2048 x 3072  32   60 70 72 75 85
```

Modes Supported by TV Encoders

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

Table A.3 Mode Support for S-Video and Composite Out

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

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

Resolution	Comments
480i (SDTV)	Supported on graphics boards with Conexant 875 or Philips 7108 TV encoders and compatible connectors, and compatible GeForce 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.