ForceWare Graphics Drivers
Release 162 Notes

Version 162.18

for Windows XP

NVIDIA Corporation

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Confidential Information

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INTRODUCTION TO *RELEASE 162 NOTES*

This edition of *Release 162 Notes* describes the Release 162 ForceWare Graphics Drivers and provides information applicable to all NVIDIA drivers. NVIDIA provides these notes to enable add-in-card (AIC) producers and original equipment manufacturers (OEMs) to monitor performance improvements and bug fixes in each documented version of the driver.

Structure of the Document

This document is organized in the following sections:

- "Changes in the Release 162 Driver for Windows XP" on page 3 gives a summary of changes, and fixed and open issues in this version.

- "The Release 162 Driver for Windows XP" on page 43 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 51 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release 162 Notes* for Windows XP includes information about NVIDIA ForceWare graphics driver version 162.18, and lists changes made to the driver since version 94.24 and 158.22. These changes are discussed beginning with the chapter "Changes in the Release 162 Driver for Windows XP" on page 3.

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CHANGES IN THE RELEASE 162 DRIVER FOR WINDOWS XP

This chapter describes open issues for version 162.18, and resolved issues and driver enhancements for versions of the Release 162 driver up to version 162.18. The chapter contains these sections:

Version 162.18 Highlights

This section provides highlights of version 162.18 of the NVIDIA Release 162 Driver.

What's New in Version 162.18

GPU Temperature Monitoring and Overclocking

Beginning with the Release 95 ForceWare graphics drivers, the NVIDIA Control Panel 3D Settings page no longer includes a page to monitor GPU temperature and overclock the GPU. To use these features, you must have NVIDIA nTune 5.05 or later installed.

nTune 5.05 has also been modified to work on *all* motherboards. It enables GPU overclocking and monitoring features on all motherboards, but exposes advanced motherboard overclocking and monitoring features on supported nForce motherboards. See the NVIDIA nTune User's Guide for further instructions on how to use NVIDIA Monitor for GPU temperature monitoring, and for more information on tuning your system.

nTune 5.05 is available for download from NVIDIA.com. See the NVIDIA website at http://www.nvidia.com/object/sysutility.html to get more information about NVIDIA nTune, to download the software, and to download the User's Guide.

New Version 1.5 of the NVIDIA Control Panel

Highlights:

- The explorer bar on the left-side pane.with Help, Recent Tasks, and Related Tasks sections.has been replaced by a navigation tree that lets you easily locate the page you need for accomplishing tasks.

- Tasks are still organized by groups, but the navigation tree eliminates the need for the main category pages, reducing the steps needed to get to a task.

- When you re-open the NVIDIA Control Panel, it remembers the last page you visited.

Resolved Issues for Windows Vista

See for a list of resolved issues.

Changes in Version 162.18

The following sections list the changes made and issues resolved since driver versions 94.24 and 158.22.

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The NVIDIA bug number is provided for reference.

Fixed Issues—Windows XP 32-bit

Fixed Single-GPU Issues

GeForce 8 Series GPUs

- The NVIDIA Control Panel crashes when closing the nTune "NVPerformance Benchmark".[299621]

- GeForce 8800 GTX: NVIDIA Control Panel "Resize HDTV Desktop" (overscan compensation) sliders do not maintain their settings. [289632]

  This issue is fixed with an NVIDIA-provided workaround to enable overscan compensation and allow the Resize HDTV Desktop sliders to work properly.

  See NVIDIA Knowledgebase Article #2064 for instructions.

- GeForce 8800 GTX: 1680x1050 resolution is not available when using the Dell 3007WFP monitor. [284181]

- GeForce 8800 GTX/GTS: Flat-panel scaling doesn't work with wide-screen monitors. [309707]

- GeForce 8800 GTX: After changing the HDTV component format, the display either turns blank or reverts to the previous format.[279287]

- GeForce 8800 GTX: "This task cannot be opened now ..." message appears when clicking the NVIDIA Control Panel "Run multiple display wizard" navigation link after clicking the "Adjust video color settings" navigation link.[298477]

- GeForce 8800 GTX: Elder Scrolls: Oblivion–animation is visible through the trees when HDR and NVIDIA Control Panel antialiasing are enabled. [296265]

- GeForce 8800 GTX: S.T.A.L.K.E.R.–the crosshair is missing when antialiasing is enabled. [308826]

- GeForce 8800 GTX: Far Cry–blue-screen crash occurs after playing the game for awhile.[301780]

- GeForce 8800 GTX, GeForce 7900 GTX/7300 GS: Ghost Recon Advanced Warfighter 2– the game fails if you try to change settings right after the loading a mission. [308576]

- GeForce 8800 GTX: Lost Planet: Extreme Condition– the game crashes after the player destroys some objects in mission 01. [302251]

- GeForce 8600: The NVIDIA Control Panel "Setup multiple displays" page reverts back to the "Adjust image settings with preview" page after running 3DMark05.[297180]

- GeForce 8600: Rainbow Six Vegas–the game does not start when antialiasing is set to 8x, 8xQ, or 16x.[298195]

- GeForce 8600 GTS, GeForce 8500 GT: Hot-key switching between the internet games *Mir 2* and *My* causes the screen to go blank, requiring a hard reboot. [325400]

- GeForce 8500/8400/8300: "Could not create the Direct3D device" message appears when previewing a 3D screen saver in Dualview mode.[299992]

- GeForce 8600: On closing the NVIDIA Control Panel, the display configuration automatically switches from Clone mode to Single-display mode.[303542]

- GeForce 8500/8400/8300: The NVIDIA Control Panel "Resize HDTV Desktop" navigation link does not work consistently.[301312]

- GeForce 8500/8400/8300: With the resolution set to 1080i, the desktop cannot be changed from Dualview mode to Clone mode.[300058]

GeForce 7 Series GPUs

- Lock On: Modern Air Combat–graphics corruption occurs. [251807]

- NVIDIA Control Panel: Unable to run the NVIDIA Multiple Display wizard with any nView multi-display mode enabled. [220979]

- Interlaced HDTV formats cannot be set in the NVIDIA Control panel. [234045]

- The NVIDIA Control Panel: After selecting HD Component 480i / 576P/720 format, the Color Quality slider in the Change Resolution page is grayed out. [219744]

- GeForce 7 Series: Video playback using PowerDVD shows a green line at the bottom of the screen. [255204]

- GeForce 7950 GX2: Video errors occur with HDTV output while processing 3D video. [324544/324541]

- GeForce 7900 GTX 512M : The NVIDIA Control panel Run Multiple Display wizard link does not work. [263295]

- GeForce 7900 GT/GS 256 MB, NVIDIA Control Panel: The Adjust Video Color Settings test image remains on the primary display after dragging the NVIDIA Control Panel to the secondary display. [236110]

- GeForce 7800 GT 256MB: 3DMark03–slow performance and video corruption occurs when running 3DMark03. [215804]

- GeForce 7800 GTX, Windows XP Media Center Edition 2005: The desktop goes blank while changing resolutions. [230674]

- GeForce 7800 GTX: The NVIDIA Control Panel "Modify full screen video options" feature is visible after enabling SLI mode.[301330]

- GeForce 7900 GTX: The NVIDIA Control Panel "Run Multiple Display wizard" can be opened while playing a video and no pop up "Task cannot be opened right now" warning message appears.[303529]

- GeForce 7900 GTX: Corruption and frame drops occur after enabling Hardware Acceleration in Cyberlink PowerDVD 7 while playing an HQV DVD.[305058]

- GeForce 7300 256MB: Error message appears on Windows Media Player 10 when changing the refresh rate of the secondary monitor. [243674]

GeForce 6 Series GPUs

- GeForce 6800 GTX: The Restore Defaults link is not available on the NVIDIA Control Panel "Modify full-screen video options" page the first time the page is visited.[301890]

- GeForce 6600 128MB: The Screen Resolution and Refresh rate page for the secondary Dualview display shows the wrong display mode information. [195196]

- GeForce 6600 256MB: After unplugging a Dualview display from the DVI or component output, the nView multi-display settings are still available. [210104]

- GeForce 6600 128MB: Full-screen video mirror is corrupted when playing a DVRMS format file using Windows Media Player 10. [234049]

- GeForce 6600, Windows XP Media Center Edition 2005 Update Rollup2: The system restarts while playing a video using MCE. [206545]

- GeForce 6600: There is corruption in the water in the Painkiller benchmark. [187899]

- GeForce 6600 GT: After hot unplugging a DVI monitor, the monitor is still recognized by the NVIDIA Control Panel. [260936]

GeForce FX Series GPUs

- GeForce FX 5700: Error message appears after enabling NVKeystone with NVRotate enabled in 1600x1200 mode. [196563]

Fixed SLI-Mode Issues

- [SLI]: Ghost Recon Advanced Warfighter–the desktop becomes corrupted after exiting the game when the SLI split line is enabled.[262737]

GeForce 8 Series GPUs

- [SLI], GeForce 8800 GTX: SLIAA doesn't turn off after switching back to "application controlled" under the NVIDIA Control Panel->Manage 3D Settings page->Antialiasing-Mode setting.[293282]

- [SLI], GeForce 8800 GTX: Blue-screen crash occurs when enaling SLI mode with a second monitor connected to the slave GPU.[298438]

- [SLI], GeForce 8800 GTX: After enabling SLI mode, the SLI animation on the NVIDIA Control Panel Set SLI Configuration page disappears.[295415]

- [SLI] GeForce 8800 GTX: Titan Quest–with V-Sync disabled, there are horizontal black lines during the intro video. [260416]

- [SLI], GeForce 8800 GTX: Splinter Cell:Double Agent–SLI mode does not work when the game is run through the front end launcher. [298601]

- [SLI], GeForce 8800 GTX: Dungeon Siege 2–there is a block of corruption around the mouse cursor.[297306]

- [SLI], GeForce 8800 GTX: Elder Scrolls: Oblivion–visual indicators do not display the correct information when SLI AA is enabled.[296267]

- [SLI], GeForce 8800/8600: Act of War–the cursor flickers when playing the game in multi-GPU AFR modes.[221369]

- [SLI], GeForce 8500/8400/8300: The NVIDIA Control Panel crashes after resuming from 3D screen saver preview in Dualview mode.[302725]

GeForce 7 Series GPUs

- [SLI], GeForce 7950 GX2 512MB Quad NVIDIA SLI: Civilization 4– white area of corruption with flickering appears while zooming out. [257464]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI: Counter-Strike–with SLI mode enabled, a blue-screen crash occurs when changing the rendering mode from Direct 3D to OpenGL. [242851]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI: Chronicles of Riddick–- VSync tear occurs when SLIAA8x is enabled. [246144]

- [SLI], GeForce 7950/7900 GT 256MB: Spellforce 2– flickering corruption appears in the frame with SLI mode enabled. [239308]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Sid Meier's Pirates– video overlays are corrupt when SLI SFR mode is used. [221666]

- [SLI], GeForce 7950 GX2, GeForce 6800/6600: X3 Demo–Flickering occurs while running the X3 demo as a benchmark. [213708]

- [SLI], GeForce 7900 GTX: The image on the NVIDIA Control Panel "Set SLI Configuration" page disappears after clicking the "Monitor Temperature Level" main navigation tree item.[293140]

- [SLI], GeForce 7800 GTX: The NVIDIA Control Panel crashes if you enable SLI mode after invoking the screen saver several times.[302681]

- [SLI], GeForce 7300 GT: With SLI mode enabled, the command prompt is corrupted and flickering when the DOS box is view in full-screen mode.[303214]

GeForce 6 Series GPUs

- [SLI], GeForce 6800: The NVIDIA Control Panel "Adjust Video color settings" page is corrupted when SLI is disabled.[296818]

Fixed Issues–Windows XP 64-bit

Fixed Single-GPU Issues

- GeForce 8500/8400/8300: With the resolution set to 1080i, the desktop cannot be changed from Dualview mode to Clone mode.[300058]

- GeForce 8500/8400/8300: There is corruption on the NVIDIA Control Panel 'Change flat panel scaling' page after changing the display] from DFP to CRT.[296837]

- GeForce 8500/8400/8300: 400: The NVIDIA Control Panel Apply and Cancel buttons are present on the "Resize HDTV Desktop" page when no settings have been changed.[298515]

- GeForce 8500/8400/8300: "Could not create the Direct3D device" message appears when previewing a 3D screen saver in Dualview mode.[299992]

- GeForce 7950 GX2, Windows XP x64: The displays lose sync when hot plugging a display and then enabling Clone mode. [232405]

- GeForce 7900 GTX: The NVIDIA Control Panel "Run Multiple Display wizard" can be opened while playing a video and no pop up "Task cannot be opened right now" warning message appears.[303529]

- GeForce 6100/6150, Windows XP x64: The nView Display Settings page in the Classic NVIDIA Control Panel disappears. [232829]

- GeForce 6100/6150: The NVIDIA Control Panel Apply and Cancel buttons don't appear after changing the HD format twice.[303478]

Fixed SLI-Mode Issues

- [SLI], GeForce 7800 GTX, SLI, Windows XP x64: Half-Life 2 Day of Defeat does not run. [193487]

Open Windows XP Issues in Version 162.18

As with every released driver, version 162.18 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.

- "NVIDIA Recommendations" on page 12
- "NVIDIA Issues—Single GPU" on page 13
- "NVIDIA Issues—SLI Mode" on page 18
- "Windows XP 64-bit Issues" on page 22
- "Application Issues" on page 24

NVIDIA Recommendations

- Single display modes such as TV only, DFP/LCD only or CRT only provide the best performance and quality from Windows Media Center Edition.

  Dual display modes such as Dualview and nView Clone and Span modes are not recommended.

- When using the trial version of WinDVD 6 from InterVideo.com, you may experience TV or DVD playback problems in Windows Media Center if you change resolutions during video playback. This is most often seen when switching from windowed to full screen mode.

  This problem does not occur with the latest full OEM versions of WinDVD or with other Windows Media Center qualified DVD decoders.

- If you perform a clean driver installation (no previous NVIDIA drivers installed), ***you must reboot your computer***. If you do not reboot, the predefined application profiles will not be activated and you may experience application stability problems.[124320]

NVIDIA Issues—Single GPU

All GPUs

- HDCP cannot be enabled with the Dell 30" flat panel on resolutions higher than 1280x800, which prevents playback of HD DVDs or Blu-ray discs. [328561]

- The NVIDIA Control Panel Run Display Optimization Wizard back button does not work.[302285]

- DVI display is blurry with normal display timing settings.[282940]

  The blurriness does not occur if "Treat as HDTV" is selected and then CVT advanced timings are used.

- Battlefield 2: Corruption and flickering occur in the grass when video settings are set to High.[272027]

- Star Wars: Republic Commando: Application crashes when starting a new game.[254010]

- Dark Messiah of Might and Magic–light flickers on the weapons and characters, and the system freezes after a period of gameplay.[260689 260335 260315 262958]

- FEAR–reflection in the puddle flickers.[259670]

- There is no display in Clone mode when TV is switched from Component to Composite.[259390]

- NVIDIA Control Panel Category Pages: Foreign language text exceeds the boundary of category windows.[234800]

- NVIDIA Control Panel Category Pages: Japanese translation issues exist in the menu options.[257063]

GeForce 8 Series GPUs

- GeForce 8 Series, GeForce 6600: HQV DVD shows corruption when played using Windows Media Player.[302235]

- GeForce 8800 GTX: Video frame freezes while audio continues when playing H.264 HD titles using PowerDVD.[325436]

- GeForce 8800 GTX: The system hangs after playing a Blu-ray disc for awhile using PowerDVD. [318755]

- GeForce 8800 GTX: Blue-screen crash occurs when changing resolutions while Direct3D, OpenGL, and video applications are open at the same time.[262074]

- GeForce 8800 GTX: When connecting HDTV mode and setting the resolution to 1080p, there is no TV output.[270122]

- GeForce 8800 GTX: nTune (5.05.38.00) GPU fan control settings are not available (grayed out). [308669]

- GeForce 8800 GTX: nTune (5.05.38.00) GPU fan control settings revert to previous settings when applied.[308683]

- GeForce 8800 GTX: Star Wars: Battlefront 2–there is corruption during the training mission when played at high resolutions. [310721]

- GeForce 8800 GTX: Sid Meier's Railroads!–during gameplay, the driver crashes or the application freezes.[297044]

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

- GeForce 8800 GTX: Dungeon Siege 2–the mouse cursor is "laggy" and jittery when CSAA is enabled.[297301]

- GeForce 8600: Jaggies appear during de-interlace video playback using Windows Media Player. [301769]

- GeForce 8600 GT/GS: When attempting to set the HD mode to 576i, the resolution switches to 480i instead. [275079]

- GeForce 8600: Dropped frames occur with high bit-rate HD DVD or Blu-ray disc H.264 titles. [324963]

- GeForce 8600 GT: Call of Duty 2–the game crashes under the following settings: in-game settings of 1920x1200 resolution and 2x antialiasing, NVIDIA Control Panel enhanced antialiasing mode set to 16xQ. [312949]

- GeForce 8600: Rise of Nations:Rise of Legends–the game crashes to the desktop when the resolution is set to 1920x1200 and antialiasing is set to Medium from the game control panel.[298503]

- GeForce 8600: Thief Deadly Shadows–there is texture corruption when using the game control panel default settings.[299579]

- GeForce 8500/8400/8300, GeForce 7300 GT: After switching from Dualview mode to VGA single-display mode, the output appears on the DVI in signle-diaplsy mode. [327042]

GeForce 7 Series GPUs

- GeForce 7 Series: 709 color space is not present during playback of Blu-ray discs or HD DVDs.[263124]

- GeForce 7950 GX2, GeForce 7600 GT, NVIDIA Control Panel: When starting playback of a Blue-ray disc or HD DVD while the Adjust Video Color Settings page is open, the 'Incompatible graphics driver' warning message appears.[261644]

- GeForce 7950 GX2, NVIDIA Control Panel: "Restore Default" doesn't affect some options in the Manage Custom Timing page.[260080]

- GeForce 7950 GT, GeForce 7900 GT/GS, GeForce 7600 GT: Dragging the Cyblerlink application between the primary and secondary Dualview displays results in Cyberlink error message.[251639]

- GeForce 7950 GX2: Pirates of the Caribbean: The Legend of Jack Sparrow–edge of the screen glows when antialiasing is enabled.[243365]

- GeForce 7950 GX2: Occasionally the HDTV desktop resize screen does not pop up after clicking the Resize Desktop tab.[232400]

- GeForce 7900 GX2, NVIDIA Control panel: The Transparency AA and Gamma Correct AA settings do not restore to their default values.[239137]

- GeForce 7900 GTX: There is color corruption in the intro clips of Happy Feet VC1 Blu-ray disc with WinDVD. [321000]

- GeForce 7900 GTX: Audio/video is out of sync when playing the H264 Blu-ray disc "X-Men: Last Stand" using WinDVD. [320737]

- GeForce 7800 GTX: Clicking Cancel after starting the NVIDIA Control Panel "Resize HDTV desktop" function reverts the settings to the default instead of the previous settings.[300995]

- GeForce 7800 GTX: There is no output on the HDTV. [296699]

- GeForce 7800/7900, 3D Stereo: 3DMark05–in the first test, return to proxycon, there is texture corruption in the tunnel.[226754]

- GeForce 7800 GT/GTX, Windows XP Media Center Edition: Video skips intermittently when playing HD network transport streaming clips.[173324]

- GeForce 7800 GTX, Windows XP: Need for Speed Underground 2–when changing to a resolution higher than 1024x768 on a 1920x1200 widescreen flat panel, the game attempts to select the next higher resolution, which is 1280x960 and not supported by most flat panels.[171938]

  A known workaround is to manually add the mode 1280x960 from NVIDIA's Custom Timings control panel and then continue to select the resolution needed.

- GeForce 7600 GT: "The Battle Of The Middle Earth II"–corruption occurs when loading the game.[261274]

- GeForce 7600 GT, NVIDIA Control Panel: Desktop Color seettings are getting applied even after clicking **Cancel**.[261019]

- GeForce 7600 GT, Dual-link display: When playing a Blu-ray disc at resolutions greater than 1280x800 on a dual-link display, the Cyberlink warning message erroneously appears saying to reduce the resolution to less than 1920x1080.[260489]

- GeForce 7600 GT: Several HD-DVD titles do not display the PiP feature–"Charlie and the Chocolate Factory", "Batman Begins", and "Terminator 3". [260056 260054 257644]

- GeForce 7600 GT: "Troy" HD-DVD title doesn't play using the Cyberlink application. [255684]

- GeForce 7600 GT: "Constantine" HD-DVD VC-1 title shows corruption on the secondary stream.[245579]

- GeForce 7800 GTX Windows XP MCE 2005: Some artifacts appear when de-interlacing is enabled on 1920x1080i video clips.

- GeForce 7800 GTX: The driver cannot switch to another HD format after being set to 480i or 576i.[301828]

- GeForce 7800 GTX: The NVIDIA Control Panel SLI rendering option is not available for the component-out connection. [301841]

  It is available when using the S-Video connection.

- GeForce 7800 GTX: The NVIDIA Control Panel crashes if you change the HD format of the component-out display under Dualview.[301752]

- GeForce 7300 LE: NVIDIA Control panel fails to switch modes depending on the starting and target modes.[232009]

- GeForce 7300 GT: Test Drive Unlimited–blue-screen crash occurs while changing antialiasing settings in the game. [317480]

- GeForce 7300 GT: Demo Medieval II : Total War–blue-screen crash occurs while playing the game with Battle map resolution set to 2560x1600 and with 4x AA enabled. [317852]

- GeForce 7300 GT: Command & Conquer 3 Tiberium Wars–some object are not rendered when using the high graphics setting. [316633]

- GeForce 7300LE: Half-Life, Counter Strike–objects are ghosting when played at the default settings .[317466]

- GeForce 7300 GT: NVRotate is not able to rotate the display from normal mode to 180 degree rotated mode.[301341]

- GeForce 7070 PV/ 7025, GeForce 7600 GS: With HDMI and DVI connected in Dualview mode, there is no display on the DVI after hot-unplugging the HDMI. [308318]

GeForce 6 Series GPUs

- GeForce 8 Series, GeForce 6600: HQV DVD shows corruption when played using Windows Media Player.[302235]

- GeForce 6600, Windows XP Media Center Edition 2005: MCE application goes blank while playing a video file.[197914]

- GeForce 6600: Blue-screen crash while playing WMV HD files after enabling DirectX VA. [316693]

- GeForce 6600: The user cannot change HDTV formats after a first time switch to HDTV from the DVI or VGA display. [301293]

- GeForce 6200 128MB: The Television Setup wizard erroneously lets you change the display mode while playing a video file.[209367]

- GeForce 6150/6100: The Cyberlink Power DVD - HQV Film detail test fails.[230897]

- GeForce 6150/6100: Battlefield 2 has high frequency flicker of horizontal bands scanning across the screen on bright backgrounds.[191291]

NVIDIA Issues—SLI Mode

All GPUs

- [SLI]: Direct3D games do not run in 1080i mode when SLI/Multi-GPU mode is enabled. [251457]

- [SLI], The NVIDIA Control Panel prompts you to reboot the system after enabling SLI while in Dualview mode.[220320]

- [SLI], With SLI mode enabled, the game Haze plays slowly.[258862]

- [SLI], With SLI mode enabled, switching from DVI to analog display results in the wrong refresh rate being set.[258703]

- [SLI], 3DMark 2005: Intermittent, horizontal, single-pixel width lines are drawn on the screen during CPU Test 1. [272972]

  This issue does not occur with V-Sync enabled.

- [SLI]: Far Cry–flickering and shifting sky occurs in the Research level when SLI is enabled. [265091]

  This issue does not occur with V-Sync enabled.

GeForce 8 Series GPUs

- [SLI], GeForce 8800 GTX: The SLI visual indicators for some SLIAA modes do not match the NVIDIA Control Panel settings. [327393]

- [SLI], GeForce 8800 GTX: The SLI visual indicators for SLI16xS antiliasing displays 16xQ antialiasing instead. [327398]

- [SLI], GeForce 8800 GTX: Stalker–with SLI mode enabled, the game performance does not improve by much.[306807]

- [SLI], GeForce 8800 GTX: Half-Life 2 Episode 1–with SLI mode enabled, purple textures appear with 16xQ CSAA enabled at 2560x1600 resolution.[302602]

- [SLI], GeForce 8800 GTX: Far Cry–there is a flickering/shifting sky in the Research level when SLI mode is enabled.[265091]

- [SLI], GeForce 8800 GTX: Neverwinter Nights 2– flickering occurs between screen transitions when SLI is enabled.[296352]

- [SLI], GeForce 8600: The SLI Load Balancing indicator does not appear when invoked. [311894]

- [SLI], GeForce 8600: Blank display with corruption occurs when resuming from system standby. [295619]

- [SLI], GeForce 8600 GT: Far Cry–there are flickering patches when moving around within the game. [324450]

- [SLI], GeForce 8600: 3DMark06–the benchmark crashes to the desktop when run at 1600x1200 resolution and with 8x antialiasing enabled. [324430]

- [SLI], GeForce 8600: Splinter Cell Double Agent–the game crashes to desktop at 1600x1200 resolution and with 32xQ SLIAA enabled.[306223]

- [SLI], GeForce 8600: Half Life 2–white patches appear in the sky when 8xAA is enabled from the NVIDIA Control Panel (Enhanced mode) in conjunction with 2xMSAA enabled from the game control panel.[306259]

- [SLI], GeForce 8500/8400/8300: Blue-screen crash occurs when resuming from standby mode while an OpenGL demo is running. [317880]

GeForce 7 Series GPUs

- [SLI], GeForce 7950 GX2, GeForce 7900 GX2: Grand Theft Auto: San Andreas–intro videos are slightly darker when SLI AA is enabled.[218773]

- [SLI], GeForce 7950 GX2, GeForce 7900 GTX, SLI: Call of Duty 2– occasional corruption appears when Optimize for SLI is enabled.[231291]

- [SLI], GeForce 7900 GX2 Quad NVIDIA SLI: Tomb Raider: Legend– video playback is warped within an inch of the SLI mode split line.[232372]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI, NVIDIA Control Panel: The SLI performance mode option is visible for individual application profiles after SLI is disabled.[248074]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI, NVIDIA Control Panel: SLI performance mode setting on an application profile will not reset to defaults once a different option is selected.[248082]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI, NVIDIA Control Panel: "Use these settings only until I restart my computer" option on the Overclocking page does not work.[240984]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Displays that are connected to the secondary card in a Quad SLI configuration are not visible in the NVIDIA Control Panel or nView pages.[238633]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI: Selecting the numbered display in the "Select Display" drop-down list in the NV control panel produces a black screen and resets the display resolution.[230055]

- [SLI], GeForce 7950/7900 GX2, Quad NVIDIA SLI: F.E.A.R.– the UI text occasionally remains on the screen after exiting the game when 16x SLIAA is enabled.[218338]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI: Prince of Persia: Warrior Within–the intro movie does not display after restarting a level if SLI and antialiasing are enabled.[225527]

- [SLI], GeForce 7950 GX2, Quad NVIDIA SLI: Serious Sam II–some shadows flicker when Dynamic Shadow is set to high.[244538]

- [SLI], GeForce 7950/7900 GX2, SLI, Quad NVIDIA SLI: The Quake 4 custom color profiles are not effective and are not labeled correctly.[221708]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Rome:Total War–there is flickering and slow performance when playing the game.[242482]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: The Godfather–the intro videos flash.[242532]

  You can correct the problem by disabling VSync.

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Lock On– slow performance in the game. [242488]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Black and White 2–there is flickering and water corruption. [242484/239460]

- [SLI], GeForce 7900 GTX: Direct3D applications have rolling/ flickering corruption with SLI enabled on component/composite/S-Video out. [301608]

  This issue does not occur when using DVI output.

- [SLI], GeForce 7900 GTX/GeForce 7950 GX2 Quad NVIDIA SLI: Civilization 4– game creation screens have text rendering artifacts with 8xS AA or 16x SLI AA enabled.[235471]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Prince of Persia: Warrior Within–with SLI mode enabled, there is a block of corruption.[225514]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Need for Speed: Most Wanted–with SLI mode enabled, textures on vehicles flicker.[233330]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Everquest 2–with SLI mode enabled, water ripples flicker. [233162]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI: Thief 3–the bottom half of the screen does not display when starting a new game.[225691]

- [SLI], GeForce 7800 GT, SLI: Unable to change the SLI-output display. [227209]

- [SLI], GeForce 7 and 6 Series, SLI: Evolution GT–with SLI mode enabled under any AFR mode, flickering occurs. [237141]

- [SLI], GeForce 7 and 6 Series, SLI: Tomb Raider–with SLI mode enabled, there is stuttering and banding corruption.[226727]

- [SLI], GeForce 7 and 6 Series, SLI: With SLI mode enabled, Evolution GT flickers under any AFR mode. [237141]

- [SLI], GeForce 7 and 6 Series, SLI: With SLI mode enabled, there is stuttering and banding corruption in Tomb Raider.[226727]

GeForce 6 Series GPUs

- [SLI], GeForce 6800 GT: The desktop splits into two screen when the resolution is lower than 1280x800.[324342]

- [SLI], GeForce 6800 GT: Elder Scrolls IV : Oblivion– SLI antialiasing does not work with this game.[325710]

- [SLI], GeForce 6800 GT: Test Drive Unlimited–the game crashes with an error message when SLI16x AA is enabled. [324046]

- [SLI], GeForce 6800 256MB, SLI: Counter-Strike–text in the in-game control panel is corrupt when NVIDIA Control Panel antialiasing settings are enabled.[247877]

- [SLI], GeForce 6800, SLI: The character portrait in Dungeon Siege 2 is corrupted.[196514]

- [SLI], GeForce 6600, SLI: With SLI mode enabled, there are corrupt shadows in the Lost Coast benchmark when the application 2x antialiasing is enabled. [237598]

- [SLI], GeForce 6600, SLI: with SLI mode enabled, horizontal segments of terrain in World of Warcraft are shifted out of position, and in other cases the foreground terrain intermittently fails to hide background objects.[237486]

- [SLI], GeForce 6600, SLI, Windows XP: Lock On: Modern Air Combat has lower than expected performance at high resolutions with antialiasing enabled. [172920]

- [SLI], GeForce 6600, SLI: City of Heroes–when SLI mode is enabled without the SLI connector connected, the screen is dark and textures in the clothing do not load.[226217]

- [SLI], GeForce 6600 w/TurboCache: The driver is unable to be installed with this hardware setup.[325700]

Windows XP 64-bit Issues

- GeForce 8500/8400/8300: Parts of the NVIDIA Control Panel "Resize HDTV desktop" page are corrupt or missing.[297618]

- GeForce 8800 GTX: The NVCOPP test fails after resuming from S1 or S3 sleep state resume for SONY HDTV monitors connected by DVI-DVI.[305057]

- GeForce 8600: CPU usage increases dramatically during WMV HD clip playback.[303153]

- GeForce 7950 GX2, Windows XP x64: The NVIDIA Control Panel crashes when trying to restore defaults in the 3D Settings pages. [230292]

- GeForce FX 5200, Windows XP x64: Display Properties Window corruption occurs while playing a .vob file in Windows Media Player, previewing 3D Flower Box screen saver, and then reverting from the preview. [234046]

- [SLI], GeForce 8600: Blank display with corruption occurs when resuming from system standby. [295619]

- [SLI], GeForce 7950 GX2 Quad NVIDIA SLI, Windows XP Professional Edition x64: The stained glass window in Elder Scrolls: Oblivion is corrupted when SLI is enabled. [244685]

Not NVIDIA Issues

This section lists issues that are not due to the NVIDIA driver.

Application Issues

All GPUs

• Dual Core CPU: Counter Strike 1.6 hangs if you play Cheating Death 4.33.4 at same time.

This application does not properly recognize dual-core CPUs.

• Counter-Strike Source frame rate is jumpy.

Jittery/lagging movement has been seen when starting a game after running the Video Stress Test.

Smooth movement is restored after exiting and then restarting the application. The issue does not appear when creating a new game, disconnecting, and then creating another new game.

• HQV DVD playback is bobbing when running in overlay mode.[272289]

This is not an NVIDIA bug, but rather an issue with the Intervideo decoder in WinDVD 8.

• During DVD and HD DVD/Blu-ray playback, a white screen may appear over video when toggling from windowed to full-screen mode. [263449]

This issue was reported in driver v96.94 as an NVIDIA driver issue, but now appears to be an application issue with PowerDVD. NVIDIA is working with the application developer to provide a fix.

• 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.

- S.T.A.L.K.E.R. Shadow of Chernobyl: This application is not compatible with the *Override any application setting* or *Enhance the application setting* antialiasing modes from the NVIDIA Control Panel Manage 3D Settings page.

Please use the in-game antialiasing options.

- Splinter Cell Double Agent crashes when loading a single player game.[270517]

This is an application issue. You can work around this issue by creating a shortcut to launch the game as follows:

1 Navigate to the game install directory, then change to the sub-folder \SCDA-Offline\system.

2 Create a shortcut to splintercell4.exe.

3 Add "-ll" to the command line of the shortcut.

4 Use this shortcut to launch the single player version of the game.

- HQV DVD playback is bobbing when running in overlay mode.[272289]

This is not anNVIDIA bug, but rather an issue with the Intervideo decoder in WinDVD 8.

- Age of Empires 3: Setting application to 1600x1200 with shader quality set to 'very high' causes menus and game to become corrupted.

This issue can be fixed by installing the v1.07 game patch.

- Company of Heroes: Dark transparent band appears when running the in-game performance test.

This is an application issue and can be reproduced on NVIDIA GeForce 7900 and ATI Radeon X1950 GPUs.

- Elder Scrolls 4 Oblivion: Running at 2560x1600 with NVIDIA Enhanced Application mode 16xQ, extremely rare 1-2 second pauses occur during some fighting. [262685]

This appears to be an application issue in how large textures are created during the in-game fighting.

- Far Cry: Water reflection on Archive level is not correct. [253431]

  This appears to be an application issue. NVIDIA is working with the application developer to try to patch their application

- Half-Life 2 Lost Coast: Color corruption occurs in the video stress test after changing the display mode.

  This is a known application issue.

- Half-Life 2 Episode One: Gravity Gun has z-fighting problems on certain portions of the gun. [263505]

- Quake4: Random pauses occur during gameplay. [260029]

  This appears to be an application issue that affects testing on Quake4 with dual-core optimizations turned on. Turning off the SMP value in Quake4 eliminates this problem.

- During DVD and HD DVD/Blu-ray playback, a white screen may appear over video when toggling from windowed to full-screen mode.[263449]

  This issue was reported in driver v96.94 as an NVIDIA driver issue, but now appears to be an application issue with PowerDVD. NVIDIA is working with the application developer to provide a fix.

- Age of Empires 3: Vertical sliver appears near the right side of the intro videos. [221738]

- Battlefield 1942 hangs after playing for a few minutes.[265230]

  This is an application issue with dual-core CPUs.

GeForce 8 Series GPUs

- Half-Life 2 Lost Coast: GeForce 8800 GTX fog looks different than GeForce 7900 GTX fog, and dynamic shadows look solid black. [262215]

  The GeForce 8800 GTX image quality matches the Microsoft Reference Rasterizer. This issue may affect other Half-Life 2 based engines such as Counter-Strike Source and Half-Life Episode 1. NVIDIA is working with the application developer to try to patch their application.

- GeForce 8500/8400/8300: Video corruption occurs when playing the Blu-ray disc title "Tom Cruise the Last Samurai" in IVI. [321632]

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

GeForce 7 Series GPUs

- GeForce 7900 256MB: WinDVD video is corrupt when playing a DivX file.

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

- GeForce 7 and 6 Series: Prey has non-functioning application antialiasing when the desktop color depth is at 16 bpp.

  This is an application issue and not an NVIDIA bug. Enabling 32-bpp desktop color depth fixes this problem.

- GeForce 7 Series, GeForce 6 Series GPUs: Textures are not rendered in Age of Empires 3 at 1600x1200 and higher resolutions.

  This is an issue with the application.

- GeForce 7950 GX2, Quad NVIDIA SLI: World of Warcraft–Changing antialiasing modes in the NVIDIA control panel does not improve image quality.

  This is not a bug, but an issue with the application's "Glow" effect. When the Glow effect is enabled, the NVIDIA Control Panel antialiasing settings do not work. Please use in-game antialiasing.

- GeForce 7950 GX2, NVIDIA Control Panel: The Overclocking Configuration - Test button does not appear to have any effect.

  This is not a bug. The test is being performed, but there is no visual indicator.

- GeForce 7950 GX2: The Age of Empires intro video has a vertical sliver on the right side.

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

- GeForce 7800 GTX 512 MB: Windows Media Player 10 crashes after playing a DVD for a few minutes.

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

- GeForce 7800 GTX/GT: The Chronicles of Riddick does not render correctly at 2560x1600 on the Apple 30" Cinema display.

  This is an issue with the application.

- GeForce 7800 GTX, Windows XP Media Center Edition 2005 Update2: When running in window mode, there is tearing in the video on the top of the screen when playing MPEG-2 high definition clips on HDTV output.

This is an application issue with Media Center and does not occur if you run Media Center in Fullscreen mode.

- GeForce 7800 GTX/GT: Transparency antialiasing does not work with Grand Theft Auto San Andreas.

  The driver does not apply Transparency antialiasing to triangles that are alpha-blended. Applications with alpha blending do not benefit from Transparency antialiasing.

- GeForce 7800 GT/GTX: Graphics are corrupted at the title screen in Age of Empires 3.

  This is not an NVIDIA bug, but an issue with the application.

- GeForce 7800 GT/GTX: F.E.A.R. Demo has blocky explosion effects.

  This is not an NVIDIA bug, but an issue with the application.

- GeForce 7800 GTX: Age of Empires 3 demo fails to run when connected to a DVI flat panel.

  This is not an NVIDIA bug, but an issue with the application. Demo versions of the application attempt to set a mode that is not supported on the flat panel. To work around the issue, locate the file newprofile.xml and change the resolution setting to 1024x768.

  This is fixed in final versions of the game.

- GeForce 7800 GTX/GT, GeForce 6800: Textures are not rendered in Age of Empires 3 at 1600x1200 and higher resolutions.

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

- GeForce 7800/GeForce 6800 GT: Shadow corruption/soft shadows appear after changing video settings in F.E.A.R.

  This is an issue with the application and is documented as such in the demo's release notes.Disabling antialiasing fixes the soft shadow corruption.

- GeForce 7800 GTX / GeForce 6 Series: The Chronicles of Riddick: Escape from Butcher Bay does not run under OpenGL.

  This issue is resolved by downloading and installing the game's 1.1 patch available at http://www.vugames.com/file_list.do?gamePlatformId=1839. This problem occurs as a result of the application checking the NVIDIA OpenGL driver for a version 1.5 instead of 2.0.

- GeForce 7800 GTX, GeForce 6800/6800 Ultra, GeForce 6600 GT: Explosion effects in the game Pariah result in full-screen corruption.

This is an issue with the application. To work around the issue, set the variable `HasNvidiaTexM32Tex` in the file `pariah.ini` to (1). ((0) is the default.)

- GeForce 7800 GTX / GeForce 6800 Ultra: Age of Empires 3 demo v1.0 has corruption on the title screen when running at high resolutions (1600x1200) with antialiasing set to Medium or High, Shader Quality set to Very High, and Shadow Quality set to Very High.

This is an issue with the application.

GeForce 6 Series GPUs

- GeForce 6600 128MB, Windows XP Media Center Edition 2005:The MCE screen does not appear when switched to full-screen mode.

This is an issue with the application.

- GeForce 7 Series, GeForce 6 Series GPUs: Textures are not rendered in Age of Empires 3 at 1600x1200 and higher resolutions.

This is an issue with the application.

- GeForce 7800 GT/GTX, GeForce 6800/6800 Ultra/GT: When selecting Detect Optimal Frequencies in the control panel, the desktop refresh rate switches to 60Hz.

- GeForce 7800 GTX/GT, GeForce 6800: Shadows fail to render in Splinter Cell 1.

- GeForce 7800 GTX/GT, GeForce 6800/6600: Ground and water textures are corrupted when zooming out in Civilization 4.

- GeForce 6800 PCI-E: The top of the video tears when watching a transport stream clip in VMR mode with Windows Media Player.

- GeForce 6800: Corruption occurs on certain vehicles in Joint Operations: Typhoon Rising.

- GeForce 6800: Command and Conquer Generals: Zero Hour displays green tint.

- GeForce 6800: Flickering corruption appears around the mouse cursor in Dungeon Siege 2.

- GeForce 6800, Windows XP Media Center Edition: Blue-screen crash occurs when dragging Windows Media Player 10 window from the primary to the secondary display.

- GeForce 6800 PCI-E: When played in Overlay mode, there is an initial hesitation during the Galaxy Quest menu ship flyby.

- GeForce 7800 GTX / GeForce 6800 Ultra: Age of Empires 3 demo v1.0 has corruption on the title screen when running at high resolutions (1600x1200) with antialiasing set to Medium or High, Shader Quality set to Very High, and Shadow Quality set to Very High.

  This is an issue with the application.

- GeForce 6800 / 6200: Battlefield 1942 has shimmering textures.

  Battlefield 1942 uses negative LOD intensively in the game, but this should not be used in conjunction with anisotropic filtering.

  To reduce shimmering, set the advanced option "negative LOD bias" to CLAMP, and then the image settings slider to High Quality.

- GeForce 7800/GeForce 6800 GT: Screen corruption may occur with F.E.A.R. when antialiasing and soft shadows are enabled.

  This is an issue with the application and is documented as such in the demo's release notes.Disabling antialiasing fixes the soft shadow corruption.

- GeForce 7800 GTX, GeForce 6800/6800 Ultra, GeForce 6600 GT: Explosion effects in the game Pariah result in full-screen corruption.

  This is an issue with the application. To work around the issue, set the variable `HasNvidiaTexM32Tex` in the file `pariah.ini` to (1). ((0) is the default.)

- GeForce 6800: Shadows are not rendering correctly in Ground Control 2.

  This is not an NVIDIA bug, but an issue with the application.

- Geforce 6800: Half-Life 2 fog is different when using ATI hardware.

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

- GeForce 6800: Aspect ratio is incorrect when movie transitions from 4:3 to 16:9 playback using PowerDVD5 Trail (download from the Cyberlink Web site).

  This is an application issue, and does not occur with other DVD players.

- GeForce 6800 Ultra, Windows XP: Movies are choppy in Prince of Persia Warrior Within. However, gameplay is not affected.

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

- GeForce 6800 Ultra PCI-E: Shadows are not rendering correctly in Ground Control 2.

- GeForce 6600/6800 (128MB): 3D Mark 2003 demo mode results in an out of memory error at 1600x1200x32 with 4x antialiasing enabled.

  This is not a bug. The problem occurs because there is not enough memory to run 3D Mark03 in this mode with a 128MB board.

- GeForce 6600: The 3D Pipes screen saver crashes when previewed with the desktop rotated 90 degrees and then switched back to 0 degrees (no rotation).

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

- GeForce 6600 GT: Antialiasing doesn't work with Serious Sam II Demo.

  This is not a bug. HDR in Serious Sam II is not supported by the NVIDIA control panel antialiasing.

- GeForce 6600 (128 MB): The game Hitman—Contracts refuses to start with graphics options set to the maximum (1600x1200, 4x antialiasing, 16x anisotropic filtering).

  This is not an NVIDIA bug, but an issue with the application.

- GeForce 6600, GeForce FX 5600 Ultra: There is intermittent corruption on the first warning screen of some DVD titles.

  A patch for this issue is available from Microsoft.

- GeForce 6600: Artifacts appear in the introduction videos and during game play in Tomb Raider: Angel of Darkness at 1600x1200 and with 4x antialiasing enabled.

  This is not an NVIDIA bug.

- GeForce 6200 256 MB: Windows Media Player 10 hangs when the desktop is rotated.

  This is an application issue and not an NVIDIA bug.

- GeForce 6200 (16MB/32MB): Game-loading errors occur with Tomb Raider Angel of Darkness.

  This is an issue with the application. You can work around this issue by switching off the video using the command line switch "`-no_fmv`*".*

- GeForce 6200 with TurboCache (16MB): A Direct3D out-of-memory error occurs in Unreal Tournament 2003 when using the HardOCP Benchmark Utility version 2.1.

  This is not an NVIDIA bug.

- GeForce 6 Series: Stuttering occurs in the game EverQuest II.

  NVIDIA has optimized performance in the 77.72 drivers to reduce stuttering related to the GPU and drivers. However, in-game stuttering can still occur as the result of the following system conditions:

  - Using high-quality/maximum-visual game settings on a PC with less than 1.5 GB of system memory—EverQuest II's highest quality settings are extremely hardware intensive (graphics, memory, and CPU).

  - Misconfigured AGP aperture settings and fragmented hard disks can also contribute to in-game stuttering.

- GeForce 6 Series, Windows XP: There is no difference in lighting after turning the flashlight on and off a few times in Half-Life 2, resulting in darkness even with the flashlight on.

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

GeForce FX Series GPUs

- GeForce FX 5950 Ultra: Call of Duty 2 crashes when "optimal system settings" is chosen in the game options menu.

  This is not an NVIDIA bug, but an issue with the application. It is fixed with the full retail version of Call of Duty 2.

- GeForce FX 5950 Ultra: Homeworld2 antialiased performance is slow.

  This is not an NVIDIA bug, but is a known issue with the application. A game patch 1.1 is available at ftp://ftp.sierra.com/pub/sierra/homeworld2/updates/homeworld2_update_en_10_11.exe .

- GeForce FX 5600 Ultra, GeForce 6600: There is intermittent corruption on the first warning screen of some DVD titles.

  A patch for this issue is available from Microsoft.

- GeForce FX Series: Stuttering occurs in the game EverQuest II.

  NVIDIA has optimized performance in the 77.72 drivers to reduce stuttering related to the GPU and drivers. However, in-game stuttering can still occur as the result of the following system conditions:

- Using high-quality/maximum-visual game settings on a PC with less than 1.5 GB of system memory

  EverQuest II's highest quality settings are extremely hardware intensive (graphics, memory, and CPU).

- Misconfigured AGP aperture settings and fragmented hard disks can also contribute to in-game stuttering.

Not NVIDIA Issues–SLI Mode

- GeForce 7950 GX2 Quad NVIDIA SLI , GeForce 7900, GeForce 6800: NHL 2006–with SLI mode enabled, the screen flickers several times when exiting back to the menu from gameplay.

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

- GeForce 7900 GT/GS, Dual-Core System, SLI: With SLI mode enabled, the game Flat Out stops responding after starting a game.

  This is not an NVIDIA bug, but an issue with the OS. To resolve the issue, install the Windows Dual-Core patches.

- GeForce 7800 GTX/GT, SLI: The load balancing line is corrupted when playing Civilizations 4 at 2560x1600.

  This is not an NVIDIA bug, but a visual effect resulting from the interraction between the frame rate and the update rate of the split line.

- SLI mode does not appear capable of being enabled with City of Villains.

  This issue occurs because City of Heroes and City of Villains share the same executable name.

  You can work around this issue by either

  - *modifying the City of Heroes application profile (this will create a second City of Heroes profile) to enable SLI AFR mode, or*
  - *set AFR as the rendering mode in Global Profile.*

  For more information on customizing SLI profiles, visit www.slizone.com and navigate to Learn More->How-to Guides.

- GeForce 6 and 7 Series, SLI: SLI does not work with OpenGL applications when the SLI control panel page is open.

  This is the correct behavior with SLI rendering. If you need to adjust SLI settings for an OpenGL application you must adjust the NVIDIA control

panel settings with the application closed, then close the control panel and open the application.

- GeForce 6 and 7 Series, SLI, Windows XP: With SLI enabled, Call of Duty 2 performance appears to be slow.

  For optimal SLI performance in Call of Duty 2, you must select 'YES' for 'Optimize for SLI' in the Graphics section of System Settings.

- GeForce 6 and 7 Series, SLI, Windows XP: After selecting 'YES' for 'Optimize for SLI' in the Graphics section of System Settings when playing Call of Duty 2, the setting resets to 'No' every time you restart the game.

  The problem is that the setting does not get saved to the player's config file. You must make sure 'YES' is selected each time you launch the application or you can ensure the setting gets written to the config file in one of the following ways:

  - *Type "seta r_multiGpu 1" in the console, or*

  - *Add "seta r_multiGpu 1" to the shortcut, or*

  - *Add "seta r_multiGpu 1" directly to your config.cfg and config_mp.cfg files in your directory under the "main/players" folder.*

- GeForce 6800, SLI: If SLI antialiasing is enabled, the regular antialiasing modes are not available after disabling SLI.

  The regular antialiasing modes will be available if you disable SLI antialiasing before disabling SLI. This works as it is designed.

- With SLI enabled, the SLI split line does not appear when VSync is forced on.

  This is not a bug, and the applications are, in fact, running in SLI mode. The SLI split line/load bar is not supposed to appear when Vsync is enabled in SLI mode.

- GeForce 6800/6600 GT: Slow performance with World of Warcraft in SLI mode.

  This is not an NVIDIA bug, but instead the result of a recent patch for World of Warcraft to reduce mouse lag on slower computers by synchronizing the GPU(s). This change is unnecessary for NVIDIA users, and particularly for users with SLI configurations.

  For optimal performance when playing World of Warcraft in SLI mode:

  - Disable vertical sync within the World of Warcraft in-game video options.

- Enable "hardware mouse" acceleration and disable "smooth mouse" within the World of Warcraft in-game video options.

  "Smooth mouse" reduces mouse lag when the frame rate is low and "hardware mouse" is disabled.

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 GPUs

With GeForce 8 Series 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 GPUs.

Display Output Selection not Available on "Bridgeless" SLI

On graphics cards that can operate in SLI mode without the SLI connector (such as the GeForce 6600), you cannot select which monitor to display the output. On the SLI display property page, the option box to select the output display is not available.

SLI Connector Requirement on NVIDIA Quadro SLI Cards

The SLI connector that links two SLI cards is needed for proper SLI operation. However, the connector can be removed if you do not intend to enable SLI mode. If you remove the connector, then you must make sure that SLI mode is disabled from the NVIDIA control panel. Enabling SLI mode without the SLI connector installed will result in video corruption.

DVD Playback Issues with Dual NVIDIA Quadro NVS Cards

With both AGP and PCI NVIDIA Quadro NVS cards installed in the system, when attempting to play DVDs in full-screen mode on the display connected to the PCI card, the screen is blank.

This is not an NVIDIA bug, but rather a problem with older point releases of PowerDVD and WinDVD.

PowerDVD 5.0 Does Not Display Correctly in nView Span Mode

With nView Horizontal Span mode enabled, when the PowerDVD 5.0 playback window is dragged to the second display and then stretched to fill the display, the right area of the display is corrupted.

This is not an NVIDIA bug, but a problem with PowerDVD.

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.

3

THE RELEASE 162 DRIVER FOR WINDOWS XP

This chapter covers the following main topics:

Hardware and Software Support

Supported Operating Systems

This Release 162 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

Table 3.1 lists the NVIDIA GPUs supported by this Release 162 driver.

Table 3.1   Supported NVIDIA Consumer Products

Product	Windows XP 32-bit	Windows XP Professional x64
GeForce 8800 Ultra	X	X
GeForce 8800 GTX	X	X
GeForce 8800 GTS	X	X
GeForce 8600 GTS	X	X
GeForce 8600 GT	X	X
GeForce 8500 GT	X	X
GeForce 8400 GS	X	X
GeForce 8300 GS	X	X
GeForce 7950 GX2	X	X
GeForce 7950 GT	X	X
GeForce 7900 GTX	X	X
GeForce 7900 GT/GTO	X	X
GeForce 7900 GS	X	X
GeForce 7800 SLI	X	X
GeForce 7800 GTX	X	X
GeForce 7800 GS	X	X
GeForce 7650 GS	X	X
GeForce 7600 LE	X	X
GeForce 7600 GT	X	X
GeForce 7600 GS	X	X
GeForce 7550 LE	X	X
GeForce 7500 LE	X	X
GeForce 7350 LE	X	X
GeForce 7300 SE	X	X
GeForce 7300 LE	X	X
GeForce 7300 GT	X	X
GeForce 7200 GS	X	X
GeForce 7100 GS	X	X
GeForce 7050 PV / NVIDIA nForce 630a	X	X
GeForce 7050 PV / NVIDIA nForce 630a	X	X
GeForce 7025 / NVIDIA nForce 630a	X	X
GeForce 6800 XT	X	X
GeForce 6800 XE	X	X
GeForce 6800 Ultra	X	X
GeForce 6800 Series GPU	X	X
GeForce 6800 LE	X	X
GeForce 6800 GT	X	X
GeForce 6800 GS/XT	X	X
GeForce 6800 GS	X	X
GeForce 6800	X	X
GeForce 6700 XL	X	X
GeForce 6610 XL	X	X

Table 3.1   Supported NVIDIA Consumer Products (continued)

Product	Windows XP 32-bit	Windows XP Professional x64
GeForce 6600 VE	X	X
GeForce 6600 LE	X	X
GeForce 6600 GT	X	X
GeForce 6600	X	X
GeForce 6500	X	X
GeForce 6250	X	X
GeForce 6200SE TurboCache™	X	X
GeForce 6200 TurboCache™	X	X
GeForce 6200 LE	X	X
GeForce 6200 A-LE	X	X
GeForce 6200	X	X
GeForce 6150SE nForce 430	X	X
GeForce 6150LE	X	X
GeForce 6150 LE	X	X
GeForce 6150	X	X
GeForce 6100 nForce 420	X	X
GeForce 6100 nForce 405	X	X
GeForce 6100 nForce 400	X	X
GeForce 6100	X	X
GeForce PCX 5900	X	X
GeForce PCX 5750	X	X
GeForce PCX 5300	X	X
GeForce FX 5950 Ultra	X	X
GeForce FX 5900ZT	X	X
GeForce FX 5900XT	X	X
GeForce FX 5900 Ultra	X	X
GeForce FX 5900	X	X
GeForce FX 5800 Ultra	X	X
GeForce FX 5800	X	X
GeForce FX 5700VE	X	X
GeForce FX 5700LE	X	X
GeForce FX 5700 Ultra	X	X
GeForce FX 5700	X	X
GeForce FX 5600XT	X	X
GeForce FX 5600SE	X	X
GeForce FX 5600 Ultra	X	X
GeForce FX 5600	X	X
GeForce FX 5500	X	X
GeForce FX 5200LE	X	X
GeForce FX 5200 Ultra	X	X
GeForce FX 5200	X	X
GeForce FX 5100	X	X

Supported Languages

The Release 162 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

System Requirements

The hard disk space requirement is minimum 62.9 MB for English-only, and 79 MB for International.

Installation Instructions

Before You Begin

- **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 Open Setup.exe to launch the NVIDIA InstallShield Wizard.

2 Follow the instructions in the NVIDIA InstallShield Wizard to complete the installation.

NVIDIA Driver History

Release 162 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

Driver	Name	Versions	Comments
Release 162	ForceWare	162.18	
Release 158	ForceWare	158.19, 158.22	
Release 95	ForceWare	96.94, 95.97, 97.02, 97.44, 97.92, 97.94	
Release 90	ForceWare	91.28, 91.31, 91.33, 91.36, 91.37, 91.45, 91.47	
Release 80	ForceWare	81.67, 84.26, 81.82, 81.84, 81.85, 81.87, 81.94, 81.95, 81.98, 82.12, 82.14, 83.40 84.12, 84.20, 84.21, 84.25, 84.43	
Release 75	ForceWare	77.37, 77.56 77.72, 77.76, 77.77, 78.01, 78.05	
Release 70	ForceWare	71.84, 71.89	
Release 65	ForceWare	66.77, 66.93, 67.02, 67.03, 67.66	
Release 60	ForceWare	61.76, 61.77	
Release 55	ForceWare	56.64, 56.72, 57.30	
Release 50	ForceWare	52.16, 53.04	
Release 40	Detonator FX	44.03–45.xx	
Release 40	Detonator 40	40.60–44.02	
Release 35	Detonator 35	35.60–37.80	
Release 25	Detonator 25	26.00–32.90	
Release 20	Detonator XP	21.83–23.xx	
Release 10	Detonator 3 v1x.xx	10.00–17.xx	

A

MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 162 driver for NVIDIA products. It contains these sections:

- "General Mode Support Information" on page 52
- "Default Modes Supported by GPU for Windows XP" on page 53
- "Modes Supported by DACs and TV Encoders" on page 69

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 53.

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

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

Table A.1   Modes Supported for High Resolution Displays

Display	Maximum Resolution	Hardware Requirements
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz	• All high-end NVIDIA Quadro FX graphic solutions.
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	• All High-end NVIDIA Quadro FX graphic solutions.

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 8 Series, GeForce 7 Series, GeForce 6 Series, and GeForce FX Family GPUs" on page 54
- "nForce 630a GPUs" on page 63

Understanding the Mode Format

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

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

Meaning:

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

Figure A.1   Mode Format

Note:

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

GeForce 8 Series, GeForce 7 Series, GeForce 6 Series, and GeForce FX Family GPUs

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

- GeForce 8800 GTX
- GeForce 8800 GTS
- GeForce 8800 Ultra
- GeForce 8600 GTS
- GeForce 8600 GT
- GeForce 8500 GT
- GeForce 8400 GS
- GeForce 8300 GS
- GeForce 7950 GX2
- GeForce 7950 GT
- GeForce 7900 GTX
- GeForce 7900 GT/GTO
- GeForce 7900 GS
- GeForce 7800 SLI
- GeForce 7800 GTX
- GeForce 7800 GS
- GeForce 7650 GS
- GeForce 7600 LE
- GeForce 7600 GT
- GeForce 7600 GS
- GeForce 7550 LE
- GeForce 7500 LE
- GeForce 7350 LE
- GeForce 7300 SE
- GeForce 7300 LE
- GeForce 7300 GT
- GeForce 7200 GS

- GeForce 7100 GS
- GeForce 6800 XT
- GeForce 6800 XE
- GeForce 6800 Ultra
- GeForce 6800 Series GPU
- GeForce 6800 LE
- GeForce 6800 GT
- GeForce 6800 GS/XT
- GeForce 6800 GS
- GeForce 6800
- GeForce 6700 XL
- GeForce 6610 XL
- GeForce 6600 VE
- GeForce 6600 LE
- GeForce 6600 GT
- GeForce 6600
- GeForce 6500
- GeForce 6250
- GeForce 6200SE TurboCache™
- GeForce 6200 TurboCache™
- GeForce 6200 LE
- GeForce 6200 A-LE
- GeForce 6200
- GeForce 6150SE nForce 430
- GeForce 6150LE
- GeForce 6150 LE
- GeForce 6150
- GeForce 6100 nForce 420
- GeForce 6100 nForce 405
- GeForce 6100 nForce 400

- GeForce 6100
- GeForce PCX 5900
- GeForce PCX 5750
- GeForce PCX 5300
- GeForce FX 5950 Ultra
- GeForce FX 5900ZT
- GeForce FX 5900XT
- GeForce FX 5900 Ultra
- GeForce FX 5900
- GeForce FX 5800 Ultra
- GeForce FX 5800
- GeForce FX 5700VE
- GeForce FX 5700LE
- GeForce FX 5700 Ultra
- GeForce FX 5700
- GeForce FX 5600XT
- GeForce FX 5600SE
- GeForce FX 5600 Ultra
- GeForce FX 5600
- GeForce FX 5500
- GeForce FX 5200LE
- GeForce FX 5200 Ultra
- GeForce FX 5200
- GeForce FX 5100
-

- ///

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
-----------------------------------------------------------------
 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
-------------------------------------------------------------------
 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
```

Horizontal Spanning Modes

```
1280 x  480   8         60 70 72 75 85 100 120 140 144 150 170 200 240
1600 x  600   8         60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480   8         60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600   8         60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768   8         60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x  612   8         60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x  864   8         60 70 72 75 85 100 120 140 144 150 170 200
2560 x  720   8         60 70 72 75 85 100 120 140 144 150 170
2560 x  768   8         60 70 72 75 85 100 120 140 144 150 170
2560 x  800   8         60 70 72 75 85 100 120 140 144 150 170
2560 x  960   8         60 70 72 75 85 100 120 140 144 150 170
2560 x 1024   8         60 70 72 75 85 100 120 140 144 150 170
2720 x  768   8         60 70 72 75 85 100 120 140 144 150 170
3200 x  900   8         60 70 72 75 85 100 120 140 144 150
3200 x 1024   8         60 70 72 75 85 100 120
3200 x 1200   8         60 70 72 75 85 100 120
3840 x 1080   8   30i   60 70 72 75 85 100
3840 x 1200   8         60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
1600 x  600  16         60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  16         60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  16         60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768  16         60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x  612  16         60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x  864  16         60 70 72 75 85 100 120 140 144 150 170 200
2560 x  720  16         60 70 72 75 85 100 120 140 144 150 170
```

```
2560 x  768  16           60 70 72 75 85 100 120 140 144 150 170
2560 x  800  16           60 70 72 75 85 100 120 140 144 150 170
2560 x  960  16           60 70 72 75 85 100 120 140 144 150 170
2560 x 1024  16           60 70 72 75 85 100 120 140 144 150 170
2720 x  768  16           60 70 72 75 85 100 120 140 144 150 170
3200 x  900  16           60 70 72 75 85 100 120 140 144 150
3200 x 1024  16           60 70 72 75 85 100 120
3200 x 1200  16           60 70 72 75 85 100 120
3840 x 1080  16    30i    60 70 72 75 85 100
3840 x 1200  16           60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
1600 x  600  32           60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  32           60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  32           60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768  32           60 70 72 75 85 100 120 140 144 150 170 200
2176 x  612  32           60 70 72 75 85 100 120 140 144 150 170 200
2304 x  864  32           60 70 72 75 85 100 120 140 144 150 170
2560 x  720  32           60 70 72 75 85 100 120 140 144 150
2560 x  768  32           60 70 72 75 85 100 120 140 144 150
2560 x  800  32           60 70 72 75 85 100 120 140 144 150
2560 x  960  32           60 70 72 75 85 100 120 140 144 150
2560 x 1024  32           60 70 72 75 85 100 120 140 144 150
2720 x  768  32           60 70 72 75 85 100 120 140 144 150
3200 x  900  32           60 70 72 75 85 100 120
3200 x 1024  32           60 70 72 75 85 100
3200 x 1200  32           60 70 72 75 85 100
3840 x 1080  32    30i    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 85 100 120 140 144 150 170 200 240
 800 x 1200   8           60 70 72 75 85 100 120 140 144 150 170 200 240
```

```
 848 x  960    8            60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200    8            60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536    8            60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224    8            60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728    8            60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440    8            60 70 72 75 85 100 120 140 144 150 170
1280 x 1536    8            60 70 72 75 85 100 120 140 144 150 170
1280 x 1600    8            60 70 72 75 85 100 120 140 144 150 170
1280 x 1920    8            60 70 72 75 85 100 120 140 144 150 170
1280 x 2048    8            60 70 72 75 85 100 120 140 144 150 170
1360 x 1536    8            60 70 72 75 85 100 120 140 144 150 170
1600 x 1800    8            60 70 72 75 85 100 120 140 144 150
1600 x 2048    8            60 70 72 75 85 100 120
1600 x 2400    8            60 70 72 75 85 100 120
1920 x 2160    8    30i    60 70 72 75 85 100
1920 x 2400    8            60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
 800 x 1200   16            60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960   16            60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   16            60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536   16            60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224   16            60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728   16            60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440   16            60 70 72 75 85 100 120 140 144 150 170
1280 x 1536   16            60 70 72 75 85 100 120 140 144 150 170
1280 x 1600   16            60 70 72 75 85 100 120 140 144 150 170
1280 x 1920   16            60 70 72 75 85 100 120 140 144 150 170
1280 x 2048   16            60 70 72 75 85 100 120 140 144 150 170
1360 x 1536   16            60 70 72 75 85 100 120 140 144 150 170
1600 x 1800   16            60 70 72 75 85 100 120 140 144 150
1600 x 2048   16            60 70 72 75 85 100 120
1600 x 2400   16            60 70 72 75 85 100 120
1920 x 2160   16    30i    60 70 72 75 85 100
1920 x 2400   16            60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
 800 x 1200  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  32           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  32           60 70 72 75 85 100 120 140 144 150 170 200
1088 x 1224  32           60 70 72 75 85 100 120 140 144 150 170 200
1152 x 1728  32           60 70 72 75 85 100 120 140 144 150 170
1280 x 1440  32           60 70 72 75 85 100 120 140 144 150
1280 x 1536  32           60 70 72 75 85 100 120 140 144 150
1280 x 1600  32           60 70 72 75 85 100 120 140 144 150
1280 x 1920  32           60 70 72 75 85 100 120 140 144 150
1280 x 2048  32           60 70 72 75 85 100 120 140 144 150
1360 x 1536  32           60 70 72 75 85 100 120 140 144 150
1600 x 1800  32           60 70 72 75 85 100 120
1600 x 2048  32           60 70 72 75 85 100
1600 x 2400  32           60 70 72 75 85 100
1920 x 2160  32    30i    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
```

nForce 630a GPUs

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

- NVIDIA GeForce 7050 PV / NVIDIA nForce 630a
- NVIDIA GeForce 7050 PV / NVIDIA nForce 630a
- NVIDIA GeForce 7025 / NVIDIA nForce 630a

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
-----------------------------------------------------------------
 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
-----------------------------------------------------------------
 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
```

Horizontal Spanning Modes

```
1280 x  480  8         60 70 72 75 85 100 120 140 144 150 170 200 240
1600 x  600  8         60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  8         60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  8         60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768  8         60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x  612  8         60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x  864  8         60 70 72 75 85 100 120 140 144 150 170 200
2560 x  720  8         60 70 72 75 85 100 120 140 144 150 170
2560 x  768  8         60 70 72 75 85 100 120 140 144 150 170
2560 x  800  8         60 70 72 75 85 100 120 140 144 150 170
2560 x  960  8         60 70 72 75 85 100 120 140 144 150 170
2560 x 1024  8         60 70 72 75 85 100 120 140 144 150 170
2720 x  768  8         60 70 72 75 85 100 120 140 144 150 170
3200 x  900  8         60 70 72 75 85 100 120 140 144 150
3200 x 1024  8         60 70 72 75 85 100 120
```

```
3200 x 1200    8            60 70 72 75 85 100 120
3840 x 1080    8    30i     60 70 72 75 85 100
3840 x 1200    8            60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
1600 x  600   16            60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480   16            60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600   16            60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768   16            60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x  612   16            60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x  864   16            60 70 72 75 85 100 120 140 144 150 170 200
2560 x  720   16            60 70 72 75 85 100 120 140 144 150 170
2560 x  768   16            60 70 72 75 85 100 120 140 144 150 170
2560 x  800   16            60 70 72 75 85 100 120 140 144 150 170
2560 x  960   16            60 70 72 75 85 100 120 140 144 150 170
2560 x 1024   16            60 70 72 75 85 100 120 140 144 150 170
2720 x  768   16            60 70 72 75 85 100 120 140 144 150 170
3200 x  900   16            60 70 72 75 85 100 120 140 144 150
3200 x 1024   16            60 70 72 75 85 100 120
3200 x 1200   16            60 70 72 75 85 100 120
3840 x 1080   16    30i     60 70 72 75 85 100
3840 x 1200   16            60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
1600 x  600   32            60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480   32            60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600   32            60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768   32            60 70 72 75 85 100 120 140 144 150 170 200
2176 x  612   32            60 70 72 75 85 100 120 140 144 150 170 200
2304 x  864   32            60 70 72 75 85 100 120 140 144 150 170
2560 x  720   32            60 70 72 75 85 100 120 140 144 150
2560 x  768   32            60 70 72 75 85 100 120 140 144 150
2560 x  800   32            60 70 72 75 85 100 120 140 144 150
2560 x  960   32            60 70 72 75 85 100 120 140 144 150
2560 x 1024   32            60 70 72 75 85 100 120 140 144 150
```

```
2720 x  768  32          60 70 72 75 85 100 120 140 144 150
3200 x  900  32          60 70 72 75 85 100 120
3200 x 1024  32          60 70 72 75 85 100
3200 x 1200  32          60 70 72 75 85 100
3840 x 1080  32    30i   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 85 100 120 140 144 150 170 200 240
 800 x 1200   8          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960   8          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   8          60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536   8          60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224   8          60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728   8          60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440   8          60 70 72 75 85 100 120 140 144 150 170
1280 x 1536   8          60 70 72 75 85 100 120 140 144 150 170
1280 x 1600   8          60 70 72 75 85 100 120 140 144 150 170
1280 x 1920   8          60 70 72 75 85 100 120 140 144 150 170
1280 x 2048   8          60 70 72 75 85 100 120 140 144 150 170
1360 x 1536   8          60 70 72 75 85 100 120 140 144 150 170
1600 x 1800   8          60 70 72 75 85 100 120 140 144 150
1600 x 2048   8          60 70 72 75 85 100 120
1600 x 2400   8          60 70 72 75 85 100 120
1920 x 2160   8    30i   60 70 72 75 85 100
1920 x 2400   8          60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
 800 x 1200  16          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  16          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  16          60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  16          60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224  16          60 70 72 75 85 100 120 140 144 150 170 200 240
```

```
1152 x 1728  16           60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440  16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1536  16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1600  16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1920  16           60 70 72 75 85 100 120 140 144 150 170
1280 x 2048  16           60 70 72 75 85 100 120 140 144 150 170
1360 x 1536  16           60 70 72 75 85 100 120 140 144 150 170
1600 x 1800  16           60 70 72 75 85 100 120 140 144 150
1600 x 2048  16           60 70 72 75 85 100 120
1600 x 2400  16           60 70 72 75 85 100 120
1920 x 2160  16    30i    60 70 72 75 85 100
1920 x 2400  16           60 70 72 75 85 100
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 85 100 120 140 144 150 170 200 240
 800 x 1200  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  32           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  32           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  32           60 70 72 75 85 100 120 140 144 150 170 200
1088 x 1224  32           60 70 72 75 85 100 120 140 144 150 170 200
1152 x 1728  32           60 70 72 75 85 100 120 140 144 150 170
1280 x 1440  32           60 70 72 75 85 100 120 140 144 150
1280 x 1536  32           60 70 72 75 85 100 120 140 144 150
1280 x 1600  32           60 70 72 75 85 100 120 140 144 150
1280 x 1920  32           60 70 72 75 85 100 120 140 144 150
1280 x 2048  32           60 70 72 75 85 100 120 140 144 150
1360 x 1536  32           60 70 72 75 85 100 120 140 144 150
1600 x 1800  32           60 70 72 75 85 100 120
1600 x 2048  32           60 70 72 75 85 100
1600 x 2400  32           60 70 72 75 85 100
1920 x 2160  32    30i    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 DACs and TV Encoders

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

External DAC Mode Support

Fairchild FMS3815 Modes Supported

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

Table A.3   External DAC Modes (Fairchild FMS3815)

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

Analog Devices ADV-7123 Modes Supported

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

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

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

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

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

TV-Out Mode Support

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

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

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

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

Resolution	Comments
480i (SDTV)	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.