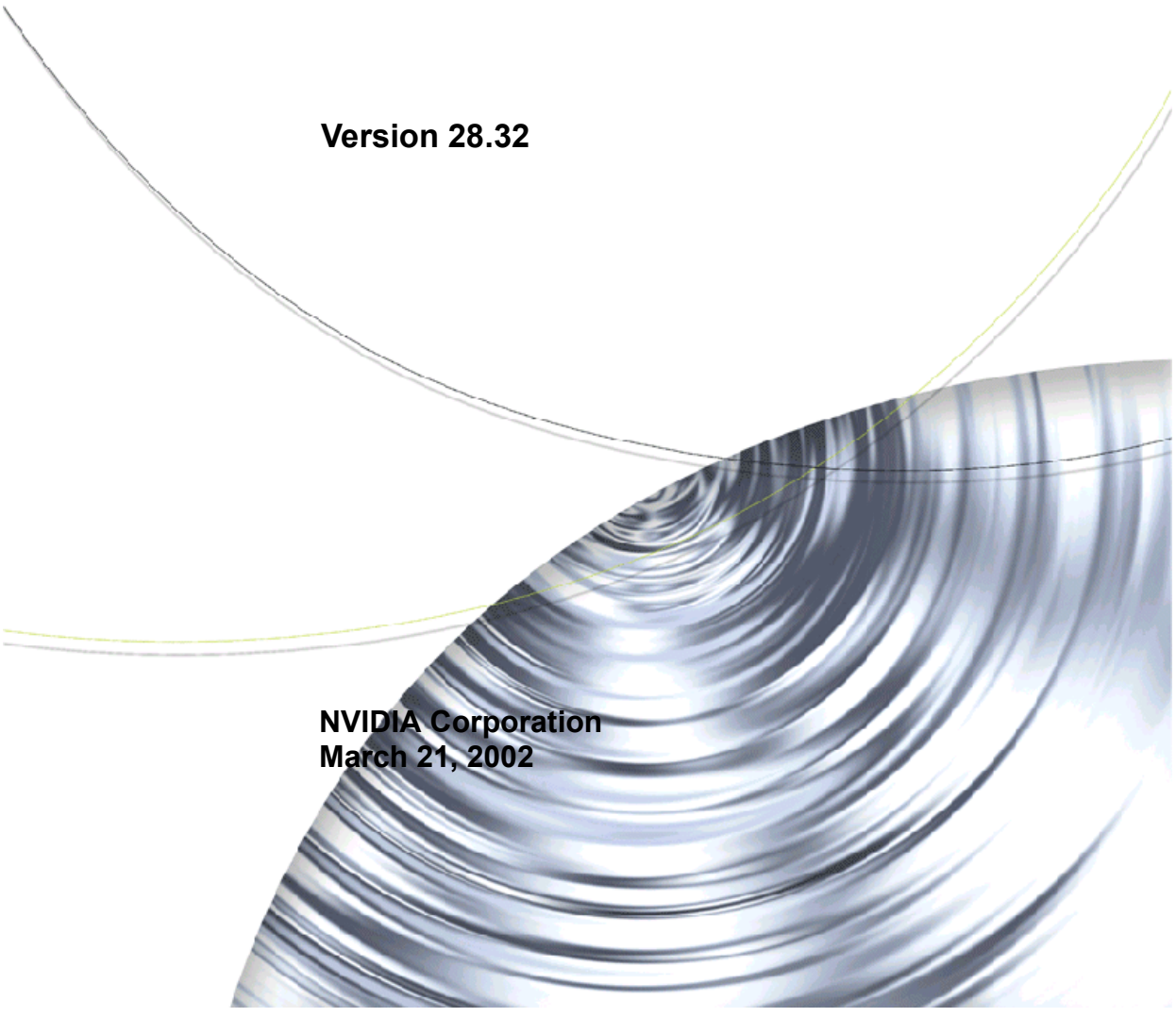
Drivers for Windows

NVIDIA Display Properties User's Guide

Version 28.32



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CHAPTER 1

INTRODUCTION

This chapter contains the following sections:

Note: *The document titled* ***NVIDIA Drivers: Release Notes*** *enables add-in-card (AIC) producers and original equipment manufacturers (OEMs) to monitor performance improvements and bug fixes in the driver.*

About this Guide

This *User's Guide* is addressed to users of NVIDIA® Display Properties, which is NVIDIA's control panel-based user interface (accessible from the Windows Display Properties Settings "Advanced" option) for configuring advanced display properties of the current release of the NVIDIA Windows Display Driver software, also called the NVIDIA "Detonator XP" Display Driver.

For technical details on the features and benefits of the NVIDIA Detonator XP driver, refer to the NVIDIA web page: **www.nvidia.com**.

nView and NVIDIA Display Properties

The NVIDIA Display Driver software includes two components: *nView* and *NVIDIA Display Properties*.

nView

nView represents a collection of multi-display technologies encompassing driver support, multi-display GPU architecture, and desktop management support.

nView Desktop Manager

The primary nView component is the Desktop Manager, which is a user-level application utility that focuses on making you more productive when working on your Windows desktop. Desktop Manager was originally created for multi-display graphics cards but has grown to enhance single-display user desktops as well. Desktop Manager supports both single-display and multi-display configurations running with single-display, multi-display, or multiple graphics cards based on NVIDIA GPUs.

Note: *See the nView "Desktop Manager User's Guide" for details on how to configure and use the Desktop Manager application.*

NVIDIA Display Properties

NVIDIA Display Properties, the topic of this *User's Guide*, is NVIDIA's control panel-based user interface for configuring advanced display properties of the current release of the NVIDIA Windows Display Driver software.

Note: *The NVIDIA Display Properties also includes the nView properties page, which lets you configure multi-display support for Span/Clone modes if you are using an NVIDIA GPU-based card that supports multiple displays. For further details, see Table 1.2, "Supported NVIDIA Products".*

System Requirements and Support

This section contains the following topics:

• "Supported Languages" on page 5

Disk Space and Operating Systems

This release of the NVIDIA Display Properites driver is

- designed for the Microsoft operating systems listed in Table 1.1 *and*
- requires 2 MB of disk space

Table 1.1 Operating System Requirements

Operating System	Minimum Requirements
Windows XP	Home and Professional Editions
Windows 2000	
Windows NT 4.0	Service Pack 4
Windows Millennium Edition (Me)	
Windows 98	Microsoft DirectX 5
Windows 95	OSR2 (OEM Service Release 2) with USB supplement for full AGP support
	Microsoft `OPENGL32.DLL`
	Microsoft DirectX 5

Note: *Windows 98 and Windows Me are collectively called Windows 9x in this guide.*

NVIDIA Detonator XP Driver Software

Make sure the current version of the NVIDIA Detonator XP Display Driver software for your Windows operating system has been installed on your computer.

Consult your System Administrator if you are unsure about the version that is installed.

Supported NVIDIA Products

Table 1.2 lists the NVIDIA products supported by the Detonator XP driver and the number of displays the GPU-based card supports.

Note: Products marked with (*) indicate that they support the TwinView feature in their multi-display versions.

Table 1.2 Supported NVIDIA Products

NVIDIA Desktop Products	NVIDIA Workstation Products	Number of Displays Supported Per Card
nForce 620-D nForce 420-D nForce 220		**1**— applies to all GPUs in this category.
GeForce4 440 Go * GeForce4 420 Go *	Quadro4 500 GoGL*	**2**— applies to all GPUs in this category.
GeForce4 Ti 4600 * GeForce4 Ti 4400 * GeForce4 Ti 4200 * GeForce4 MX 460 * GeForce4 MX 440 * GeForce4 MX 420 *	Quadro4 900 XGL * Quadro4 750 XGL * Quadro4 700 XGL * Quadro4 550 XGL * Quadro4 200 NVS *	**2** — applies to all GPUs in this category.
	Quadro4 400 NVS *	**4**
GeForce3 GeForce3 Ti 500 GeForce3 Ti 200	Quadro DCC	**1** — applies to all GPUs in this category.
GeForce2 Ti GeForce2 Ultra GeForce2 Pro GeForce2 GTS	Quadro2 Pro	**1** — applies to all GPUs in this category.
GeForce2 MX 400 * GeForce2 MX 200 * GeForce2 MX 100 * GeForce2 MX *	Quadro2 MXR *	**2**— applies to all GPUs in this category.
GeForce2 Go *	Quadro2 Go *	**2**
	Quadro2 EX	**1**
GeForce 256	Quadro	**1**
RIVA TNT2 family RIVA TNT2 Ultra RIVA TNT2 Pro RIVA TNT2 RIVA TNT2 M64 NVIDIA Vanta NVIDIA Vanta LT	---	**1** — applies to all GPUs in this category.
RIVA TNT	---	**1**

Supported Languages

The following languages are supported in the NVIDIA Control Panel

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

Notes on Feature and Configuration Support

Feature Support

- To access nView-based features using the NVIDIA Display Properites driver, you need
  - a multi-display graphics card based on any of the NVIDIA GPUs that support multiple displays on a single card, as indicated in Table 1.1, *and*
  - at least two display devices connected to the card.
- Other non-nView features are supported by either single-display or multi-display NVIDIA GPU-based cards; i.e., you can connect only one display device, such as a monitor, and access these features, provided the NVIDIA GPU supports these features.
- The options shown in the NVIDIA control panel pages may vary, depending on the specific NVIDIA GPU you are using. For example, one or more options that are available for a specific GPU-based card, such as a GeForce4 Ti or GeForce4 MX, may not be available on a GeForce2 Pro or a Quadro2 MXR.

Multi-Display Setup: Tips and Requirements

- When using a multi-display setup under Windows 2000/XP, running Windows in "Dualview" mode is strongly recommended.

- When running Windows with multiple cards (i.e., two or more NVIDIA GPU-based graphics card are installed in your computer), note the following:
  - Using cards based on the *same* NVDIA GPU is strongly recommended.
  - The same NVIDIA driver (version) *must* be installed for each card.

For a detailed discussion of using multi-display modes, see "Using Multi-Display Modes: Windows Dualview And nView Span/Clone" on page 26.

About the NVIDIA Control Panel

Examples in This Guide

- For example purposes, the NVIDIA control panel pages shown in this guide feature GPUs such as the GeForce4 Ti, GeForce2 MX, Quadro2 MXR, Quadro DCC, and so on. You may be using a different NVIDIA GPU, in which case you will see the exact name of the GPU you are using reflected in the NVIDIA control panel tab.
- The Windows 2000 NVIDIA control panel pages shown in this document also apply to Windows NT 4.0 and Windows XP; exceptions are noted, where applicable.

Accessing the NVIDIA Control Panel

To access the NVIDIA control panel, including its various properties pages, you can use this procedure:

1. From your Windows desktop, right click to display the context menu and click **Properties**.
2. Click the **Settings** tab and then **Advanced**. You will see the name of your NVIDIA GPU on a tab.
3. Click the NVIDIA GPU tab, which displays the name of the NVIDIA GPU-based graphics card that is installed on your computer.
4. Click **Additional Properties** and then any of these tabs to access its properties page:
   - OpenGL Setting
   - Direct3D Settings
   - Desktop Utilities
   - Overlay Controls

- 3D Antialiasing

5 To return to the NVIDIA GPU page, click **OK** from any of the pages listed above.

- If you are in nView mode (i.e., Dualview is disabled), you will see the NVIDIA GPU tab (showing the name of the GPU you are using) and the nView tab. On clicking the nView tab, you should have access to nView Clone and/or Span modes, depending on whether you are running Windows 9*x* or Windows XP/2000.
- If you are in Dualview mode, you will see the NVIDIA GPU tab (showing the name of the GPU you are using), the **Device Selection** tab, and the **Color Correction** tab. If the nView tab is displayed, clicking it will show you that its options are not available.

Key Terms and Concepts

analog monitor

Analog monitor refers to your CRT display. The terms "CRT", "analog monitor", and "monitor" are used interchangeably in this guide.

application

An application (or program) can have any number of windows. Some applications have only a single window such as Calculator or Notepad. Other applications can have many windows such as Outlook where you can open several E-mail windows, have your Inbox open, open calendars, etc.

digital flat panel (DFP)

A digital flat panel is a type of display device. The terms "DFP" and "digital flat panel" are used interchangeably in this guide.

control panel

Control panel refers to windows that are directly or indirectly accessible from the Windows Control Panel group. A series of such NVIDIA windows comprise the NVIDIA control panel. These windows can be accessed by clicking **Advanced** from the Windows Display Properties Settings page.

desktop

Desktop is the on-screen work area on which windows, icons, menus, and dialog boxes appear.

dialog box

Dialog boxes are user-input windows that contain command buttons and various kinds of options through which you can carry out a particular command or task. For example, in a Windows application "Save As" dialog box, you must indicate in which folder and under what name the document should be saved.

dual-card configuration

A setup where two or more display devices (such as a monitor, flat panel, or TV) are connected to two NVIDIA GPU-based graphics cards installed in the computer.

multi-card configuration

A setup where two or more display devices (such as a monitor, flat panel, TV, and so on) are connected to two (or more) NVIDIA GPU-based graphics cards installed in the computer.

multi-display configuration

A setup where two or more display devices are connected to either a

- multi-display NVIDIA GPU-based graphics card; *or*
- two (or more) NVIDIA GPU-based graphics cards.

page

The window associated with individual control panel tabs, such as Windows Display Properties Settings, nView, Device Selection, Color Correction, Screen Adjustment, Display Timing, Direct 3D Settings, OpenGL Settings, Overlay Controls, and so on.

single-display configuration

A setup where only one display device is connected to the NVIDIA GPU-based graphics card in your computer.

window

A window is any independent window on your desktop. Applications such as Outlook or Explorer may have several windows which are all part of the same application. Windows can be dragged around the screen, opened and closed, and resized.

The nView Desktop Manager application (as described in the *nView Desktop Manager User's Guide*) allows you to do even more with windows such as make them transparent or force them always to be on top of other windows.

CHAPTER 2

NVIDIA DRIVER FEATURE HISTORY

This chapter provides release history of the NVIDIA Display Driver for Windows and summarizes the features and enhancements that have been introduced in each release. It contains these sections:

Driver Release History

Release 25 is the latest NVIDIA Detonator XP Display Driver software for software. Table 2.1 contains a summary of previous driver releases and the versions associated with them. Some versions listed may not have been released outside of NVIDIA.

Table 2.1 NVIDIA Display Drivers for Windows

Driver	Name	Versions	Comments
Release 25	Detonator XP	26.00 onward . .	Releases ongoing
Release 20	Detonator XP v2*x.xx*	21.83–23.xx	Releases ongoing.
Release 10	Detonator 3 v1*x..xx*	10.00-17.xx	Releases ongoing
Release 6	Detonator 3	6.09–8.*xx*	Releases ongoing
Release 5	Detonator 2	5.00–5.*xx*	Releases ongoing

Table 2.1 NVIDIA Display Drivers for Windows (continued)

Driver	Name	Versions	Comments
Release 4	Detonator	3.00–3.*xx*	Releases ongoing
Release 3	Detonator	1.83–2.42	
Release 2		1.05–1.31	

Release 25 Enhancements

The Release 25 driver offers new features not found in previous releases of the NVIDIA Detonator XP Display Driver for Windows.

- **nView,** the next-generation of the former "TwinView" feature, is the latest multi-display technology encompassing driver support, multi-display GPU architecture, and desktop management support.
- **nView Desktop Manager** is a control panel and desktop management engine for application window management, extension of application functions, and support of multiple desktops.

  For further details, refer to "nView Desktop Manager" on page 2 of this guide or the *nView Desktop Manager User's Guide*.

  Note: The nView Desktop Manager has been significantly redesigned from its previous TwinView version. nView Desktop Manager has a control panel that is separate from the Display Properties control panel.
- **NVIDIA Display Properties** (the topic of this guide) now offers improved control panel-based features for multi-display functionality, including Clone modes and Horizontal and Vertical span modes.
- **Screen Rotation Support**—90, 180, and 270 degrees
- **Dualview support** for Windows 2000
- **Improved DirectX Video Acceleration (DXVA)**
- **Special support for NVIDIA products in the GeForce4 and Quadro4 family**:
  - IDCT support for DirectX VA
  - Improved antialiasing compatibility and performance
  - Support for hardware overlays under OpenGL for products in the Quadro4 family.
- **Enhanced 3D Stereo functionality**
  - Support for lenticular lenses on LCDs
  - Stereo DIN connector support

  - VSYNC Off with 3D Stereo
  - Stereo API for developers
- **OpenGL enhancement**
  - New `render_to_texture` extension

Release 20 Enhancements

The Release 20 driver offers new features not found in previous releases of the NVIDIA Detonator XP Display Driver for Windows.

- OpenGL 1.3 ICD with NVIDIA extensions
- OpenGL performance optimizations
- Optimized DirectX pipeline with NVIDIA pixel and vertex shaders.
- Full support for Windows XP, including
  - Full hardware acceleration for Windows XP GUI features
  - Accelerated Windows XP 3D performance through NVIDIA's XPress Link technology

Release 10 Enhancements

The Release 10 driver offers new features not found in previous releases of the NVIDIA Display Driver for Windows.

- Support for Microsoft DirectX 8
- Support for Microsoft DirectX VA 1.0.
- NVIDIA 3D Stereo (requires installation of the optional Stereoscopic driver). The driver provides stereoscopic viewing capabilities for games and still images.
- Special support for NVIDIA GeForce3 capabilities:
  - Pixel and Vertex Shader support for DirectX 8 and OpenGL®.
  - Quincunx antialiasing option for enhanced image quality and performance.
- AMD Athlon Processor and Intel Pentium 4 Processor optimizations
- Improved TwinView interface

Release 6 Enhancements

The Release 6 driver offers new features not found in previous releases of the NVIDIA Display Driver for Windows.

TwinView

TwinView is a Release 6 *and later* feature that supports connecting dual displays using an NVIDIA GPU-based multi-display card.

TwinView includes major features such as the *Virtual Desktop*, *Video Mirror*, and *Desktop Manager*.

TwinView supports a variety of display options, such as digital flat panels, red-green-blue (RGB) monitors, TVs, and analog flat panels and display modes; i.e., Standard, Clone, and Span.

Virtual Desktop

Virtual Desktop is a TwinView feature that is useful for flat panels and monitors with limited resolution. Virtual Desktop is used to set a larger than viewable area on the second display, which supports full pan-and-scan of the entire desktop area. Currently, Virtual Desktop functionality is available under

- Windows NT 4.0 and Windows 2000 in TwinView Standard or Clone mode
- Windows 9*x* in TwinView Clone mode

Video Mirror

Video Mirror is a TwinView feature that allows a video or DVD application to mirror its playback in full-screen mode on any one of the connected display devices. In other words, Video Mirror allows video data that's displayed on a hardware overlay to be displayed at full-screen on a secondary display. Currently, Video Mirror functionality is available under

- Windows 2000 in TwinView Clone mode
- Windows 9*x* in TwinView Clone or Span mode

- Windows 95 in TwinView Clone mode

Desktop Manager

See description of "nView Desktop Manager" on page 2

Digital Vibrance Control

Digital Vibrance Control (DVC), a mechanism for controlling color separation and intensity, boosts the color saturation of an image. DVC is supported by the GeForce2 MX/Quadro2 MXR/EX family and later series of NVIDIA GPUs.

OpenGL

The NVIDIA OpenGL Settings page contains the following changes:

- Improved full-scene antialiasing methods
- Additional options for Windows 2000 and Windows NT 4.0
  - Force 16-bit Depth Buffer
  - Enable Advanced Multiple Monitors

Direct3D

The NVIDIA Direct3D Settings page contains the following changes:

- Improved full-scene antialiasing methods not previously available
- Removed certain obsolete options

Cursor Trails Support

Release 6 for Windows provides support for cursor trails in Windows 9*x*.

Control Panels

TwinView, Digital Vibrance Control, OpenGL, and Direct3D features have associated NVIDIA-specific pages from which these features can be configured.

Release 5 Enhancements

The Release 5 driver offers new features not found in previous releases of the NVIDIA Display Driver for Windows.

OpenGL

Changes have been made to the core, extensions, performance, and available features of OpenGL.

OpenGL 1.2 Core

Release 5 adds all the features that constitute the OpenGL 1.2 core capabilities:

- BGRA pixel formats
- packed pixel formats (plus R5_G6_B5 formats and reversed formats)
- rescaling vertex normals
- specular highlights after texturing
- level-of-detail control for mipmapped textures (supported in software on TNT2)
- texture coordinate edge clamping
- 3D textures (performed in software on all platforms)
- vertex array subranges for optimizing vertex array processing (`glDrawRangeElements()` retains the performance of `glDrawElements()`)

OpenGL Extensions

The OpenGL extensions in Table 2.2 were added or changed in Release 5.

Table 2.2 OpenGL Extensions Modified in Release 5

Extension	Status	Comment
`ARB_texture_cube_map`	New	Same as `EXT_texture_cube_map`
`ARB_texture_env_add`	New	Same as `EXT_texture_env_add`
`ARB_transpose_matrix`	New	
`GL_ARB_texture_compression`	New (5.16)	To replace `S3_s3tc`
`NV_blend_square`	New	

Table 2.2 OpenGL Extensions Modified in Release 5 (continued)

Extension	Status	Comment
S3_s3tc	New	Deprecated
EXT_clip_volume_hint	Removed	
EXT_cull_vertex	Removed	
GL_NV_light_max_exponent	Renamed	Was GL_EXT_light_max_exponent

OpenGL Performance Enhancements

A number of features are significantly improved in Release 5.

- For RIVA TNT and TNT2, polygon offset is faster.
- For GeForce 256 and Quadro, a number of improvements have been made:
  - glDrawPixels() and glReadPixels() have been made faster
  - display lists use AGP memory for better performance
  - large texture sets are handled more efficiently by the texture manager
  - vertex arrays with two-sided lighting are faster
  - compiled vertex arrays are faster for primitives that use multitextured TexCoord2f+Color4ub+Vertex3f
  - vertex array range extension is fully functional
- Control Panel enables accelerated full-scene antialiasing (GeForce, Quadro, GeForce2)
- multi-monitor hardware is accelerated on Windows 2000
- GL_WGL_swap_interval extension can change Vsync behavior
- Vsync is on by default (default behavior is selectable with the Control Panel)
- default anisotropic filtering can be triggered by checking the anisotropic filtering box on the Control Panel
- enabling GL_POLYGON_SMOOTH no longer forces software rendering, resulting in much better performance at some cost in visual quality

Direct3D

Release 5 contains the following Direct3D changes:

- accelerated full-scene antialiasing is enabled (GeForce, Quadro, GeForce2)
- limited three-stage setup is now possible
- D3DVTXPCAPS_MATERIALSOURCE7 capability bit is now disabled (leaving the driver with DirectX 6 material source capabilities)

The following Registry keys are useful for applications that do not blit correctly:

- FLUSHAFTERBLITENABLE is a new Registry key that controls the wait-after-blit condition when the DDBLT_WAIT flag is set.

  (Default is DISABLED—do not wait.)

  Note: *This Registry key was formerly named* WAITAFTERBLITENABLE.

- FORCEBLITWAITFLAGENABLE is a new Registry key that forces the DDBLT_WAIT flag to be set for all blits, which prevents applications that do not check the return value from unexpectedly losing blits.

  (Default is DISABLED.)

- LIMITMAXQUEUEDFBBLITSENABLE is a new Registry key that limits the maximum number of queued blits to the front buffer to a value set by the PRERENDERLIMIT Registry key, which is 3 by default.

  (Default is DISABLED.)

Control Panel

NVIDIA now provides Control Panel tabs for Windows NT 4.0 and Windows 2000.

CHAPTER 3

NVIEW APPLICATIONS

This chapter contains the following sections:

nView Multi-Display Options

nView offers tremendous flexibility in how multiple display devices are used. The following are sample display combinations:

- Two RGB monitors with second RAMDAC (digital-to-analog converter)
- Two analog flat panels
- Two digital flat panels (DFPs)
- One digital flat panel and one analog flat panel
- One digital flat panel and one RGB monitor
- One RGB monitor and one TV
- One RGB monitor and one analog flat panel (with second RAMDAC)
- One analog flat panel and one TV

Note: *Actual combinations supported on a given card will vary.*

Setting up a multi-display graphics card involves installing the card on a PC, attaching the two display devices to the PC, and installing the current version of

the NVIDIA Detonator XP driver software. After rebooting the PC, the multiple display modes of the graphics cards installed are fully functional.

For detailed information on using and configuring nView options, see "nView Basics" on page 37.

Using Display Setup Modes

The NVIDIA Display Driver control panel includes several display modes for your multi-display configuration.

- **nView Span mode:** In this mode, the desktop area is spread across both displays. The refresh rate, color depth, and resolution may be independently set for each display. You can set this mode for multiple categories of displays, although display limitations may override the capabilities of the nView-enabled graphics card. For example, if the second display is a NTSC TV monitor, you won't be able to set the resolution above 800 x 600, nor set the refresh rate above 60Hz due to the limitations of the monitor itself. However, the PC monitor in such a configuration may have its refresh rate and resolution set much higher. The desktop may be "stretched" horizontally or "stacked" vertically, depending on your needs, as explained in "Horizontal & Vertical Span Modes" on page 50 or "Extended Desktop: Windows 98/ Me" on page 55.

  For further details on configuring multiple displays, see Chapter 4, "Using Multi-Display Modes: Windows Dualview And nView Span/Clone" on page 26.

- **nView Clone mode:** Two displays may show exactly the same output, which is useful for presentations. The presenter may have a small monitor on the podium while a projector or presentation quality display shows the larger image to the audience. (*See* "Clone Mode" on page 42.)

  Virtual desktop: Full support for virtual desktops is available for panels and monitors with limited resolution. Virtual desktops, with full pan-and-scan mode, can be configured for one or both displays. *(See* "Change Resolution: Clone Mode (Virtual Desktop)" on page 48 for Windows XP/2000/NT 4.0.)

  Application zoom mode: In this mode, part of the image from the primary monitor is shown on the secondary display, but zoomed in. This mode can be used for image editing, close-up work in modeling or CAD applications, or image processing and mapping applications.

- **Video Mirror:** You may want to dedicate an application to one of the two displays or run the application across both displays. Examples include entertainment applications, digital video editing, and DVD playback. For details, see "Video Mirror" on page 81.

nView Applications

- **Engineering or mechanical CAD applications** can use multiple displays for different directional views of an object or a building, such as a front or side view or even a wireframe model on one screen and a textured version of the same model on another. Many professional applications offer extensive graphical user interfaces, which can be left fully enabled and visible on one display, while the second display remains unobstructed for viewing the actual work.
- **Training and Presentation:** nView **Clone mode**, where two monitors display identical images, is useful for presentations. A presenter may use the smaller monitor on the podium, while a projector monitor reflects the presentation to the audience. In training applications, the instructor can see what the student is doing under nView Clone mode. The ability to see the presentation while it's being projected can be especially useful in mobile PCs.**Virtual Desktop**, a sub-feature of nView Clone Mode, is useful for flat panels and monitors with limited resolution and is used to set a larger than viewable area on the second display, which supports full pan-and-scan of the entire desktop area.
- **Digital content creation** applications can use one display for toolbars and palettes and the other for rendered output. Additionally, many real-time or game development environments allow the authoring tools or game engine code to be visible on one display, while showing the art or game engine in a full screen, game play-like mode on the second display.
- **Graphics Artists** can have common applications such as Adobe Photoshop or 3D Studio Max open with the palettes and menus on one monitor and the other monitor dedicated to workspace. **Writers** can use one monitor for research and the other for writing.
- **Financial** applications, such as stock trading applications, can use a pair of large digital flat panels. This would allow you to watch show real-time stock data on one screen and use the other for trading activity. You can also use two nView-enabled boards (one AGP, one PCI) to hook up four displays.
- **Video editing** applications would use one large PC display and one NTSC monitor. Since nView technology allows decoupling of refresh rates, the PC (editing) display could be a high-resolution RGB monitor for running the application (Adobe Premiere, for example), while the second monitor can be an NTSC or S-Video display for checking the video output for proper color balance and quality.
- **Entertainment** applications can use multiple display support in several ways. Game titles, such as Microsoft's Flight Simulator 2000, support multiple displays out of the box. With nView **Clone mode**, game play can be sent to a big screen TV or even to a VCR.

- **Home theater systems** can take advantage of the DVD capabilities of your PC. Simply hook up a large screen television as your second monitor and you can watch DVDs -- without buying a dedicated DVD player. *See* Video Mirror.
- **Television and Movies:** Using the nView Video Mirror feature, you can watch TV and any other video while you work.

CHAPTER 4

INSTALLATION AND UNINSTALLATION

This chapter contains the following major sections:

Before You Begin

In order to access the NVIDIA Display Properties control panel, the latest version of the NVIDIA Display Drivers software for your Windows operating system must be installed on your computer.

- 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 Display Driver software on your computer.
- This chapter discusses the installation process but does not provide step-by-step instructions on how to perform an actual installation.
- For details on configuring and using the nView Desktop Manager application component of the NVIDIA Display Driver, see the "nView Desktop Manager User's Guide."

.About the NVIDIA Display Driver Installation

NVIDIA Driver Installation provides both an `.INF` file-based installation method and an InstallShield Wizard-based installation method.

File Locations and Registry Keys

- The installation process copies all necessary files for operation into the appropriate directories along with setting up the appropriate Registry keys to indicate that this is a first-time installation.
- The nView system files are copied to your `Windows\System` directory.
- Profile files are saved in the `Windows\Nview` directory.
- As part of the install process, an uninstall is registered in your system.
- Under Windows Me and Windows XP, the NVIDIA driver is installed in "Dualview mode" display. However, note that the second display is not activated by default. You need to enable it. For details on enabling Dualview mode, see "Using Multi-Display Modes: Windows Dualview And nView Span/Clone" on page 26.
- Under Windows 2000, the NVIDIA Display Driver is installed in Span mode.

Preserving Desktop Manager Settings Before Upgrading Your Software

You can preserve your Desktop Manager settings by using profiles when you upgrade your software.

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

1. Before uninstalling or installing software, save your current nView Desktop Manager settings to a new profile.

   For example, name this profile "`My Settings`".

2. Open the `Windows\nView` directory.

   You should see your new profile `.tvp` file in this directory; for example, `My Settings.tvp`.

3. You can copy this file to a disk in your A: drive *or* to a different directory on your hard drive.

4. Uninstall the currently installed NVIDIA Display Driver software on your system. See "Uninstalling the NVIDIA Display Driver Software" on page 24.
5. Install the new version of the NVIDIA Display Driver software.
6. Copy your profile `.tvp` file back into the `Windows\nView` directory.
7. Start nView Desktop Manager and load your profile.

   When you load this profile, all your nView Desktop Manager settings, including Application Position Memory (APM) and/or Individual Application Settings (IAS) you may have set up for an application, will be restored.

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 desktop, click **Start** > **Settings** > **Control Panel > Add/ Remove Programs.**
2. Click the "NVIDIA Display Drivers" choice from the list that appears.
3. Click **Change/Remove**.
4. Click **Yes** to continue.
5. A prompt appears asking whether you want to delete all of the saved nView profiles.

Note: *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.*

6. Your system now restarts.

CHAPTER 5

USING MULTI-DISPLAY MODES: WINDOWS DUALVIEW AND NVIEW SPAN/CLONE

This chapter discusses running nView Desktop Manager with multiple displays under nView Span/Clone and Windows Dualview modes. If you are running Desktop Manager with a single display, you can skip to the next chapter.

The following topics are discussed:

nView Driver Support: Dualview vs. Span/Clone Modes

When using NVIDIA products with nView Desktop Manager, there are two ways to run multi-display configuration under most operating systems – *Windows Dualview* mode and *nView Span/Clone* modes.

- **Dualview and nView Span/Clone modes are mutually exclusive**; i.e., you cannot access nView Span/Clone modes if you have Dualview mode enabled. Conversely, you cannot access Dualview mode if you have nView Span/Clone mode enabled.
- **Windows Dualview Mode** has no special "nView" user interface since Dualview support conforms to the standard Microsoft user interface.

  Note: *When you start **Windows 9x or Windows XP** in a multi-display setup, Windows is pre-configured for "Dualview" mode. This is not the case for Windows 2000.*

- **nView Span/Clone Mode**
  - Under **Windows 2000/XP**, you can access Span/Clone modes from the Windows Display **Settings** > **Advanced** > **nView** tab.
  - Under **Windows 9*x***, only Clone mode is available and you can access it from the Windows Display **Settings** > **Advanced** > **nView** tab.

Windows Dualview Mode

Benefits of Using Dualview Mode

Note: *Dualview mode is sometimes called "native mode" as it is the native mode supported by Windows multi-display configuration; i.e. it is the "Microsoft" defined multi-display mode supported by Microsoft defined multi-display mode supported by Microsoft operating systems.*

Under Windows Dualview mode, the following occurs:

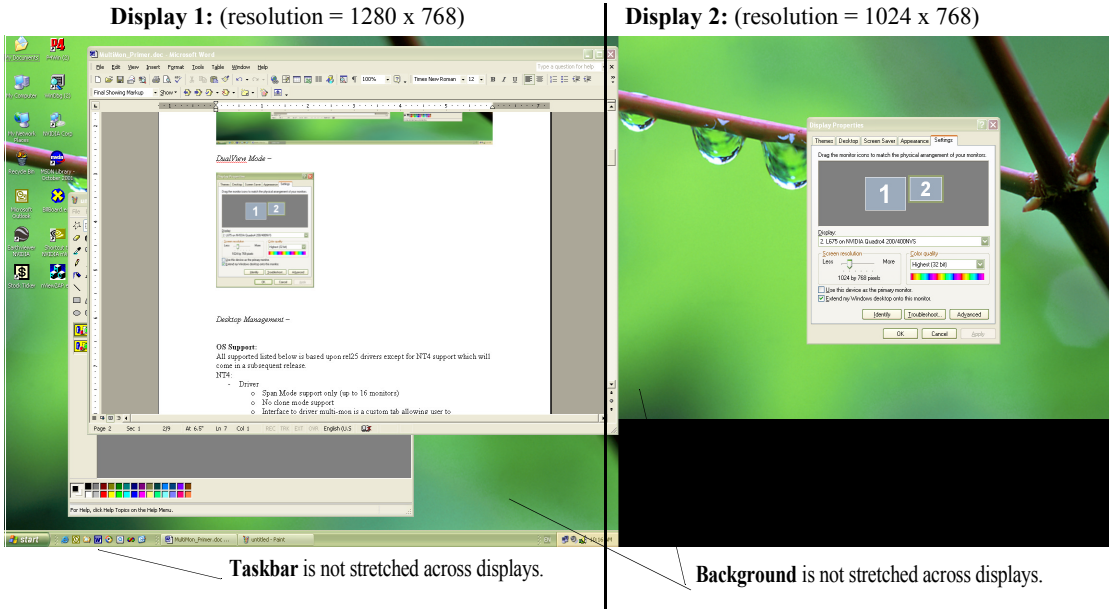
- Windows places the taskbar on only a single display.
- Windows replicates (rather than stretches) the background on each display.
- When you maximize an application, it maximizes only to the single display, and so on.

Figure 5.1 shows an example of a Dualview system where the left display is running at 1280x1024 and the right display is running at 1024x768. Notice that the background is not stretched across the displays and the taskbar appears on a single display instead of being stretched across displays.

Enabling Dualview Mode

You can set Dualview modes directly from the Windows Display Properties Settings page. In addition, Dualview operation is a required mode of operation if you run with more than two displays under Windows 2000/XP.

Figure 5.1 Multiple Display Devices in Windows Dualview Mode



Windows 2000

Note: *When you start Windows 2000 with an NVIDIA GPU-based multi-display graphics card (or multiple NVIDIA GPU-based graphics cards), you are not yet in "Dualview" mode. You can confirm this when you view the Windows Display Properties Settings page and see only one icon in the display.*

The NVIDIA Desktop Utilities properties page has an option that lets you enable "Dualview" under Windows 2000. Follow the steps below to enable Dualview.

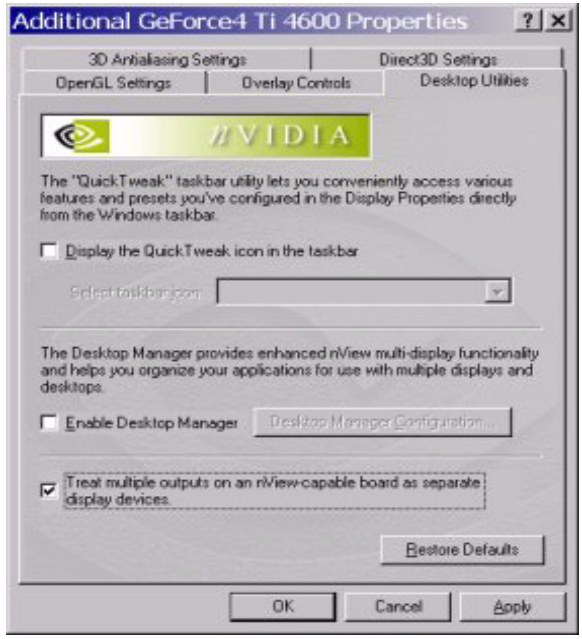
1. Make sure you have a multi-display NVIDIA GPU-based graphics card, or dual graphics cards, properly installed in your computer and securely connected to your display device.
2. Make sure your display devices are securely connected to your CPU and turned on!
3. Confirm that the NVIDIA Display Driver software (including the nView software module) has been installed on your system.
4. Start up Windows 2000.
5. From your desktop, right click to view the properties menu.

6 Then click **Properties** > **Settings** (tab) > **Advanced**.

7 Click the NVIDIA GPU tab > **Additional Properties** > **Desktop Utilities** (tab) to display the NVIDIA Desktop Utilities properties page (Figure 5.2).

8 At the bottom of the page, click the check box labeled "**Treat multiple outputs on an nView-capable board as separate display devices**" to insert a check mark in the box.

Figure 5.2 NVIDIA Desktop Utilities Page: Enabling Dualview in Windows 2000



9 Click **Apply**.

10 Restart your computer, when prompted.

11 After you log back on to your computer, from your desktop, right click to view the properties menu, then click **Properties** and the **Settings** tab. You'll notice that two displays icons appear on the Settings page now.

12 For the steps that follow, refer to the settings pages in "Display Properties Settings For Dualview Mode" on page 31.

13 Now right click the display icon that you need to "Attach" to display a pop-up properties menu.

14 Click **Attached** and click **Apply**.

You will notice that the "**Extend my Windows desktop onto this monitor...**" option becomes checked and your secondary display device is enabled.

You are now in multi-display Dualview mode under Windows 2000.

Note: *Remember that Windows Dualview and nView Clone modes are mutually exclusive. So now that you are in Dualview mode, you cannot access nView Span and Clone modes until you disable Dualview (i.e., uncheck the "**Treat multiple outputs on. . .**" check box in the Desktop Utilities properties page) and restart your computer.*

Windows XP and Windows 9*x*

When you start Windows 9*x* or Windows XP in multi-display configuration, Windows starts in "Dualview" mode. You may only need to do an "attach" procedure to enable the secondary display device. Follow these steps:

1. Make sure you have an NVIDIA GPU-based multi-display graphics card installed in your computer.
2. Make sure all your display devices are securely connected to your computer and turned on!
3. Confirm that the NVIDIA Display Driver software (including the nView modules) has been installed on your system.
4. Start Windows.
5. From your desktop, right click to view the properties menu, then click **Properties** and the **Settings** (tab). You'll notice that two display icons appear on the Settings page.
6. For the steps that follow, refer to the settings pages in "Disabling Dualview Mode For nView Span/Clone Modes" on page 33.
7. Now right click the display icon that you need to attach. A pop-up properties menu appears.

Note: *You may not have to do the next step (# 8) if the secondary display device is already attached.*

8. Click **Attached** and **Apply**.

   You will notice that the "**Extend my Windows desktop onto this monitor...**" option becomes checked and your secondary display device is enabled.

   You are now in multi-display Dualview mode.

Display Properties Settings For Dualview Mode

The Display Properties Settings shown in Figure 5.3 and Figure 5.4 apply to all the Windows operating systems (Windows 2000/XP and Windows 9*x*) in Dualview mode. Confirm that your display settings match the figures.

Figure 5.3 Windows Display Settings in Dualview Mode (1)

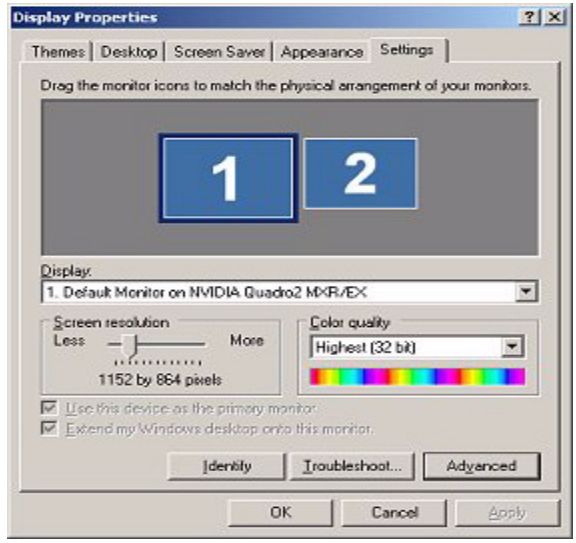
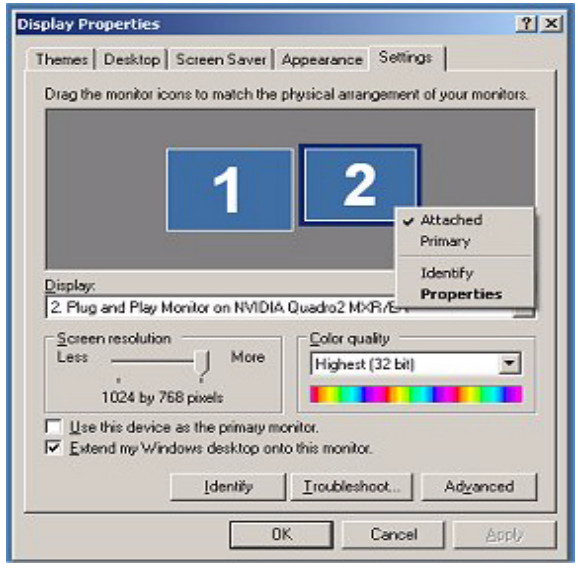


Figure 5.4 Windows Display Settings in Dualview Mode (2)



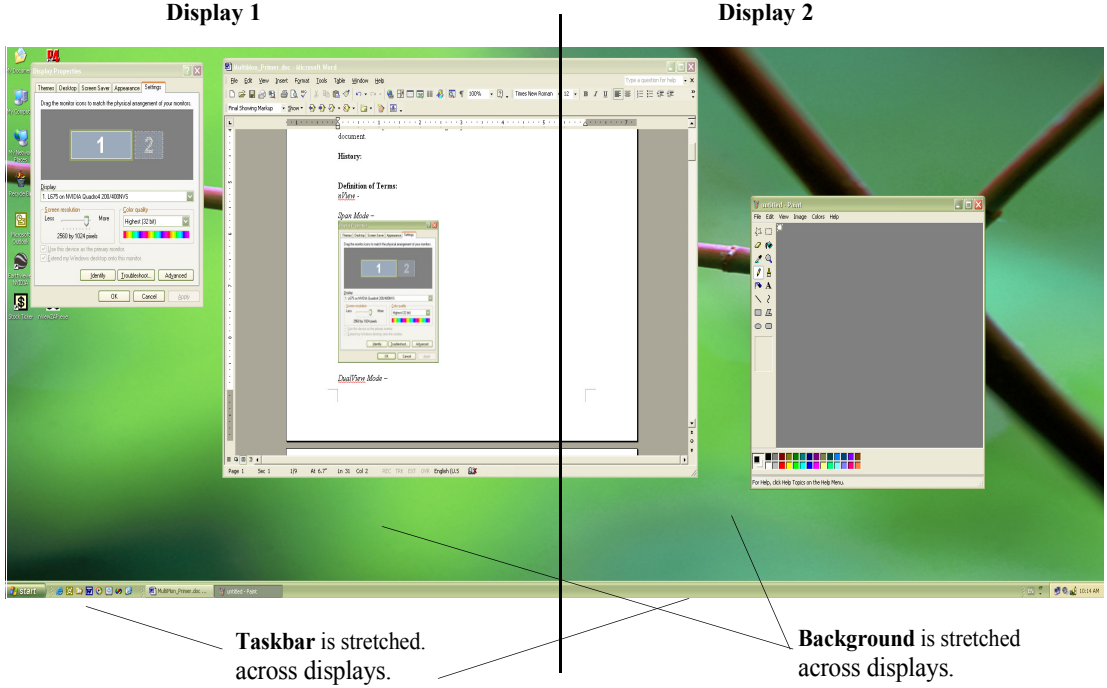
nView Span Modes: Windows 2000/XP

About nView Span Modes

In Span mode, your windows desktop is “stretched” or “spans” all of your displays. In Span mode, as far as windows is concerned, you only have a single “logical” display device connected to your computer – the real “physical” displays are combined together to give you this “logical” display.

Figure 5.5 shows an example of running Span mode under Windows XP with both displays set to 1280x1024 resolution. In this configuration, Windows recognizes *only* a single display running at 2x1280x1024 or 2560x1024.

Figure 5.5 Multiple Displays in nView Horizontal Span Mode



The key to remember when running Span mode is that Windows does not detect that you have two displays connected – as far as it is concerned, you have an oversized display. This is the reason that you cannot use different bit depths or resolutions per display. Under Span mode, Windows “stretches” the background wallpaper out to cover your large “logical” display and it stretches the taskbar out to fill your large “logical” display, as shown in Figure 5.5.

If you maximize an application, the application will be maximized to fill the large “logical” display screen – i.e., both displays.

Disabling Dualview Mode For nView Span/Clone Modes

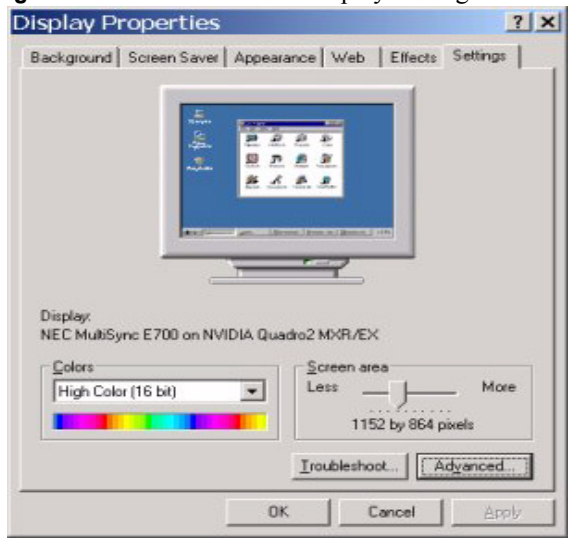
Windows 2000

Note: *If you are in Dualview mode, you need to disable Dualview mode before you can enable nView Span or Clone mode. Switching between Span/ Clone and Dualview modes requires restarting your computer.*

1. To disable Dualview, uncheck the option "**Treat multiple outputs. .**" on the NVIDIA Desktop Utilities page (Figure 5.2).
2. Click **Apply** and restart your computer.
3. Once you log back in to your computer, you can access the nView page to enable nView Clone or Span modes.

Note: *When you are in Windows 2000 Span or Clone modes, your Windows Display Properties Settings page shows only one display icon (shown in Figure 5.6), unlike Windows XP, which shows two display icons.*

Figure 5.6 Windows 2000: Display Settings With Dualview Disabled



Windows XP

Note: *Under Windows XP, you do not need to restart your computer to switch between nView Span/Clone and Dualview modes.*

When you are in Windows XP Span or Clone modes, your Windows Display Properties Settings page shows "two" display icons, unlike Windows 2000, which shows only one icon.

To enable Span or Clone modes in Windows XP, ensure that your Windows Display Properties Settings page reflects the configurations shown in Figure 5.7 through Figure 5.9.

Figure 5.7 shows that only the first display device of the two displays (as represented by the number "1") is active and Figure 5.8 through Figure 5.9 show that the second display device (represented by the number 2) is not attached.

Figure 5.7 Windows XP: Display Settings in Dualview Mode with Second Display Disabled (1)

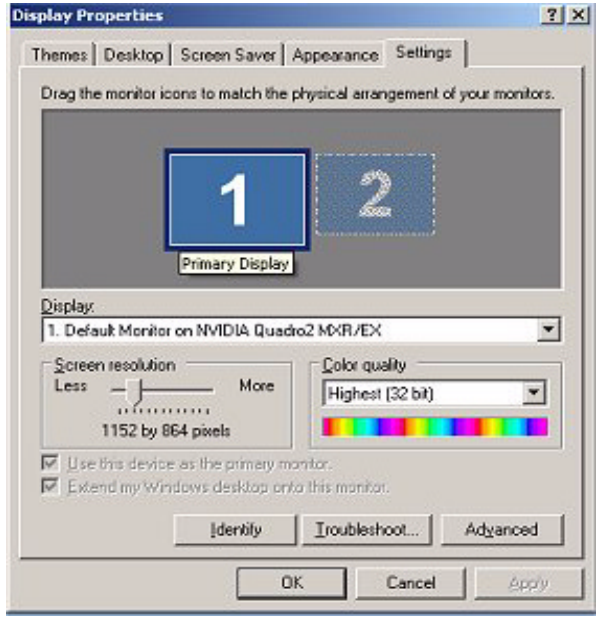


Figure 5.8 Windows XP: Display Settings in Dualview Mode With Second Display Disabled (2)

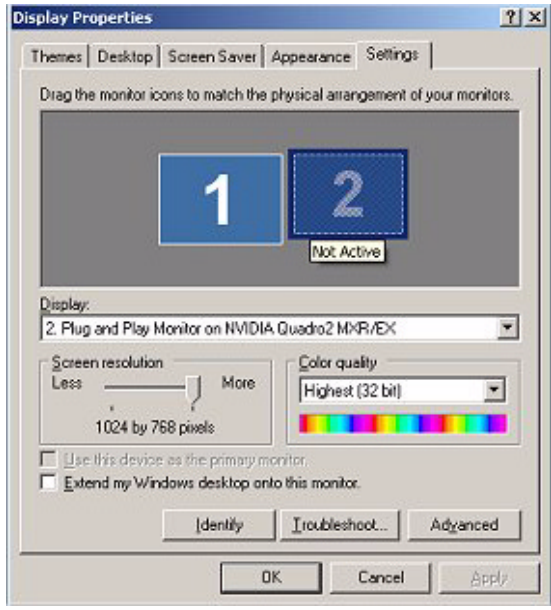
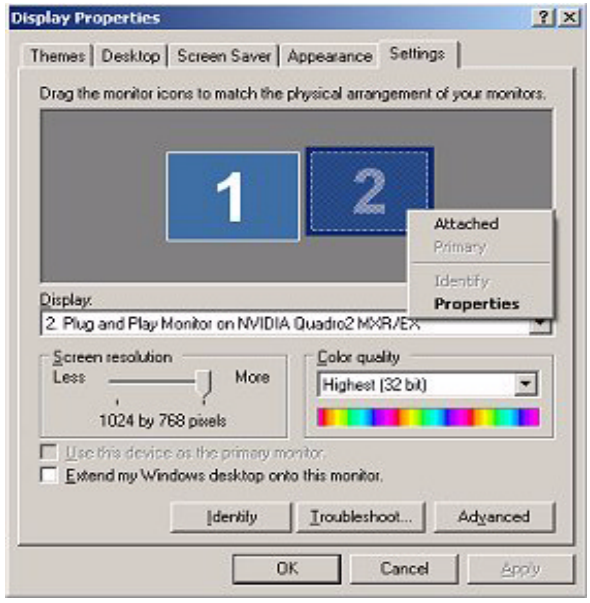


Figure 5.9 Windows XP: Display Settings in Dualview Mode With Second Display Disabled (3)

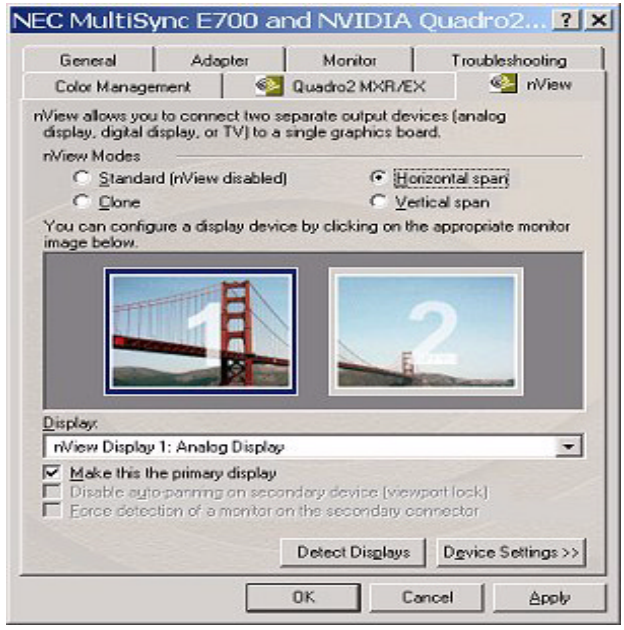


Accessing nView Span/Clone Modes

You can access nView Horizontal and Vertical Span and Clone modes from the Windows Display **Settings** tab > **Advanced** > **nView** tab. The nView page is shown in Figure 5.10.

- Under **Windows 2000/XP,** Clone and both the Span modes are available.
- Under **Windows 9*x*,** only Clone mode is available.

Figure 5.10 Windows 2000/XP: nView Display Modes



CHAPTER 6

NVIEW BASICS

This chapter contain the following major sections:

Notes Before You Begin

- To use nView features, you need a graphics card based on a multi-display NVIDIA GPU. See Table 1.1 in Chapter 1 for NVIDIA GPU support information.
- This chapter assumes you have a CRT (analog monitor) and either a digital flat panel (DFP) and/or a TV attached to your multi-display NVIDIA GPU-based graphics card. Follow the appropriate examples, depending on the display device(s) attached to your computer.
- nView offers the following display modes under Windows:
  - "Standard Mode" on page 39
  - "Clone Mode" on page 42

  - "Horizontal & Vertical Span Modes" on page 50 (*only* for Windows XP/2000/NT 4.0)
- **Under Windows 98 and Windows Me,** your NVIDIA GPU-based multi-display graphics card supports the Windows Extended Desktop feature. To use this feature, see "Extended Desktop: Windows 98/Me" on page 55.
- **Windows 2000** control panel pages also apply to **Windows NT 4.0 and XP**; exceptions are noted where applicable.

Accessing the nView Page

If you have only one display device connected, the nView page will only have Standard (single-display) mode enabled and Clone mode disabled. In single-display mode, you will not have nView Clone mode (Virtual Desktop) and Video Mirror functionality and will have *limited* Desktop Manager functionality. However, you can access the features available through the **Additional Properties** option (*see* "Additional Features and Enhancements" on page 91*)* on the NVIDIA GPU page (Figure 6.1), provided these features are not nView-based.

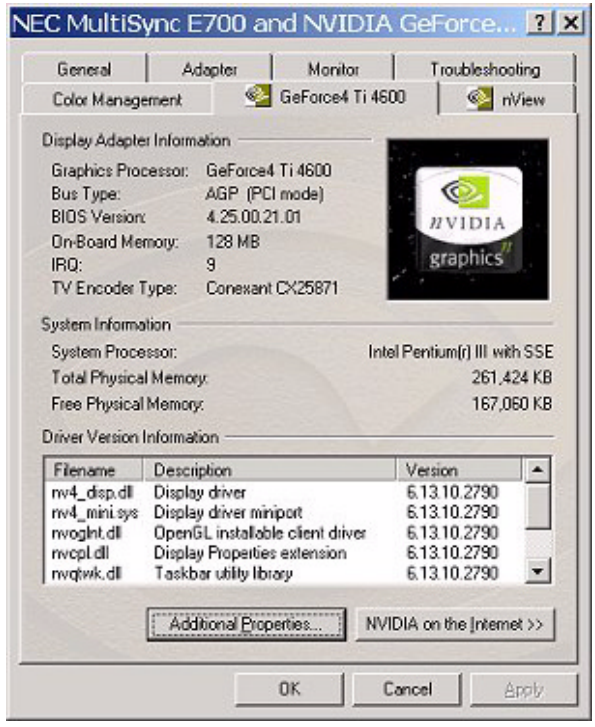
To access the nView page, follow these steps:

1. **For multi-display functionality, be sure you have at least two display devices**, such as an analog monitor (CRT) and a digital flat panel (DFP) or TV, connected to your NVIDIA multi-display card.
2. Make sure the cable connections for your devices are well secured from the device to the graphics card installed on your computer.If you are connecting a TV, be sure you have the proper cables and connectors that apply to your TV.
3. If Windows Dualview mode is enabled, you have to disable it. (See the procedure in "Disabling Dualview Mode For nView Span/Clone Modes" on page 33.
4. From the Windows Display Properties Settings page, click **Advanced**.
5. Click the **NVIDIA GPU** tab to display a page containing basic information about your display adapter, system, and the NVIDIA driver files you installed. Figure 6.1 shows an example.
6. Click the **nView** tab to display the nView page. See the figures in "Standard Mode" on page 39, which show the nView page in default "Standard" mode for Windows 9*x* and Windows 2000/XP/NT 4.0.

Note: *If you are not using multiple displays and therefore have only one display device connected to your computer, the Clone and Span mode options will be disabled (grayed out) on your nView page.*

Note: Under Windows 9x, *nView offers only Standard and Clone modes, but not the Span (Horizontal and Vertical) modes, which are available under Windows 2000/XP/NT 4.0.*

Figure 6.1 NVIDIA GPU (Quadro2 MXR) Page



Standard Mode

The Standard mode option in the nView page allows viewing in only one display.

Note: *If you have only one display device connected to your computer, the Clone and Span mode options will be disabled (grayed out) on your nView page.*

Figure 6.2 and Figure 6.3 show the nView page in Standard mode under Windows 98.

Figure 6.4 shows the nView page in Standard mode under Windows 2000/XP showing three types of display devices: CRT, DFP, and TV.

To switch display devices from analog monitor (CRT) to either a DFP or a TV display device, or variations on this combination, *see* "Switching Displays" on page 93 in the chapter "Device Selection & Configuration" on page 86.

Figure 6.2 nView Page in Standard Mode: Windows 98

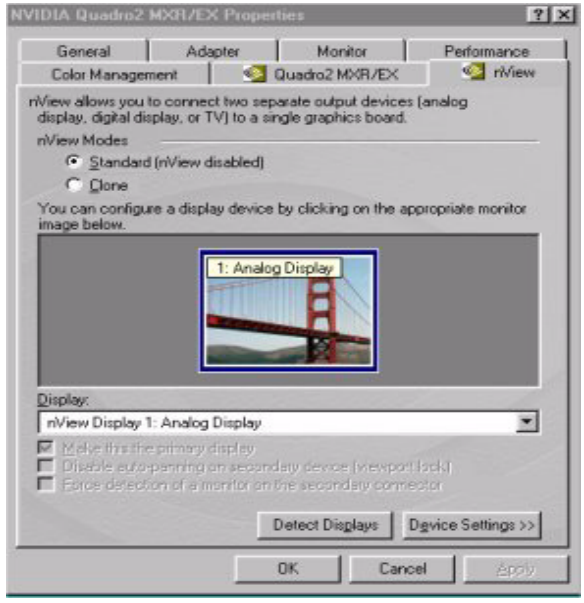


Figure 6.3 nView Page in Standard Mode with Context Menu: Windows 98

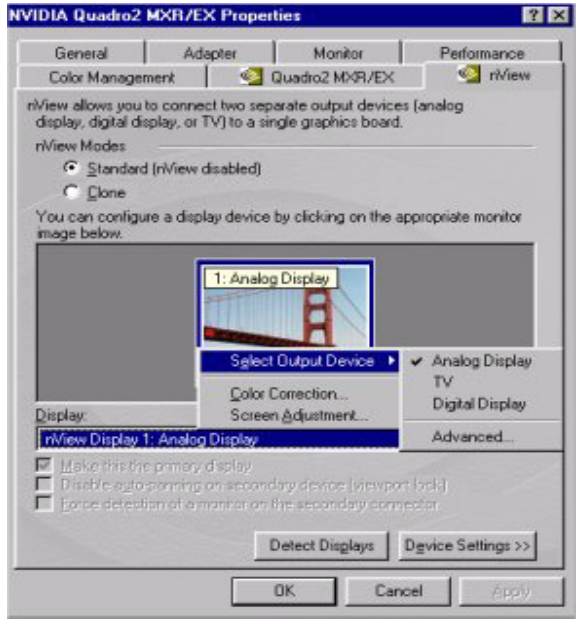
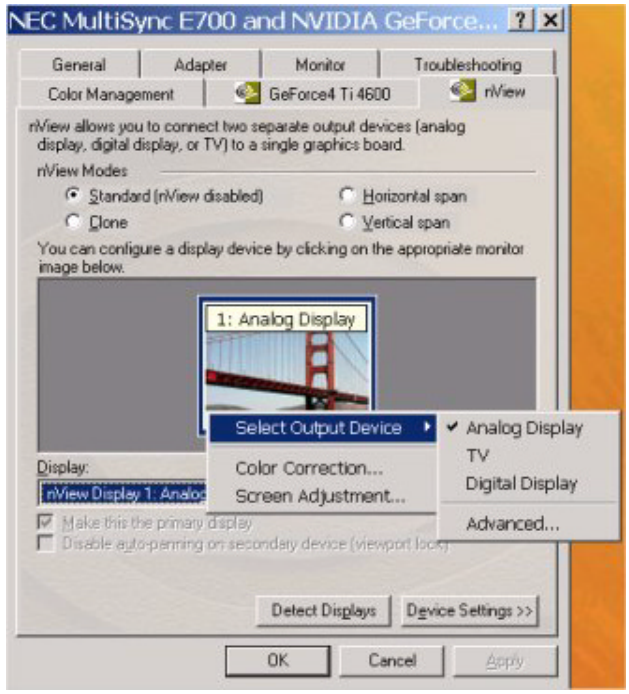


Figure 6.4 nView Page in Standard Mode with Context Menu: Windows 2000/XP



Accessing the Configuration Options

On the nView page, the monitor icon numbered **1** represents the primary display device.

In **Standard** mode, there is only one monitor icon.

In **Clone** mode, the monitor icon numbered **1** represents the primary display device and the monitor icon numbered **2** represents the secondary display device.

To access nView configuration options, use any *one* of these procedures:

- Right click the monitor icon (**1** or **2**) to display a context menu of options and click the option you want.
- Click the down arrow in the **Display** field to select the display device (i.e., nView Display 1 or nView Display 2) you want to configure. Then click **Device Settings** to display a context menu of options and choose the option you want.

Options Available for nView Clone and Span Modes

Make this the primary display: Use this option to select the display that contains the top left corner of the desktop. The most obvious effect of this option is that it swaps the positions of the monitor images.

Note: *This options is also available as the* ***Primary Display*** *option on the context pop-up menu that appears when you right click the monitor icon on the nView page in Clone and Span modes.*

Force detection of a monitor. . : Check this box if you have a monitor connected to the secondary display connector that is not being detected. This is useful for older monitors or monitors with BNC connectors.

Clone Mode

Note: *Clone Mode does not work if you have only one display device attached.*

In Clone mode, two monitors display identical images, which is useful for presentations. A presenter may use the smaller monitor on the podium, while a projector monitor reflects the presentation to the audience.

The example in this section starts with the Analog Monitor (CRT) as the primary display and TV or DFP as the secondary display. Make sure your display devices are powered on before you access the nView page. If you power on the devices after you have opened the nView page, click **Detect Displays** to enable the devices.

To access nView Clone mode, follow these steps:

1. Be sure your display devices are powered on before you access the nView page.
2. Click the **Clone** mode option on the nView page and click **Apply**.
3. Click **OK** and **Yes** when the status messages appear. Your current screen is duplicated on the clone display.
4. If necessary, click **Detect Displays** to enable devices. Figure 6.5 shows a nView Clone mode page.
5. Right click monitor icon **1** to view the context menu for the primary display, which is CRT (analog monitor) in this example.
6. From the context menu, click **Select Output Device** to select the Device Selection page. Figure 6.9 correctly shows Analog Monitor as the selected output device for display 1.
7. Click **OK** to return to the nView page.

8 Right click monitor icon **2**, then **Select Output Device** to view the display device that is enabled (checked) as your secondary device. Figure 6.6 shows **DFP** as the secondary display.

9 Then click **Advanced . .**to display the Device Selection page, which confirms that the **Digital Display** option is enabled.

10 To switch to another device, such as TV, you simply click the TV option and click **Apply**.

Figure 6.13 shows **TV** as the secondary display. For information on configuring your TV display, *see* "TV Settings" on page 77.

11 Then click **Advanced . .** to display the Device Selection page, which confirms that the **TV** option is enabled.

Figure 6.5 nView Clone Mode Context Menu: Display 1= CRT (Windows 98)

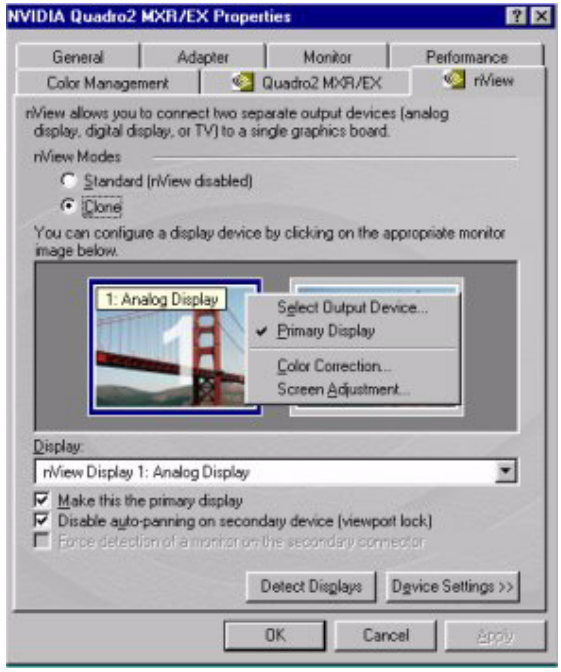


Figure 6.6 nView Clone Mode Context Menu: Display 2 = DFP (Windows 98)

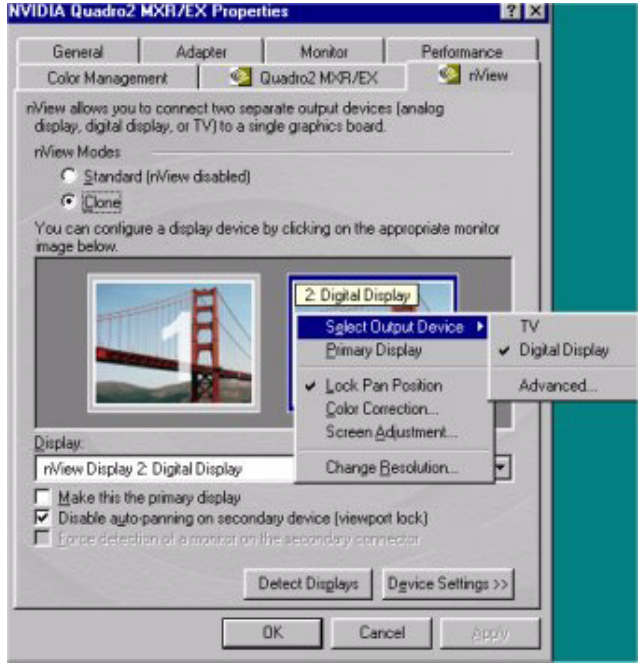


Figure 6.7 nView Clone Mode: Display 1=Analog Monitor (Windows 2000/XP)

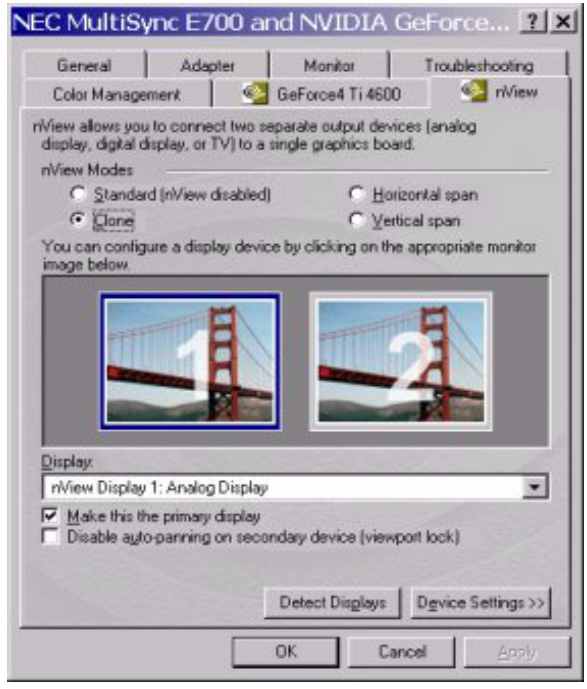


Figure 6.8 nView Clone Mode Context Menu: Display 1= CRT (Windows 2000/XP)

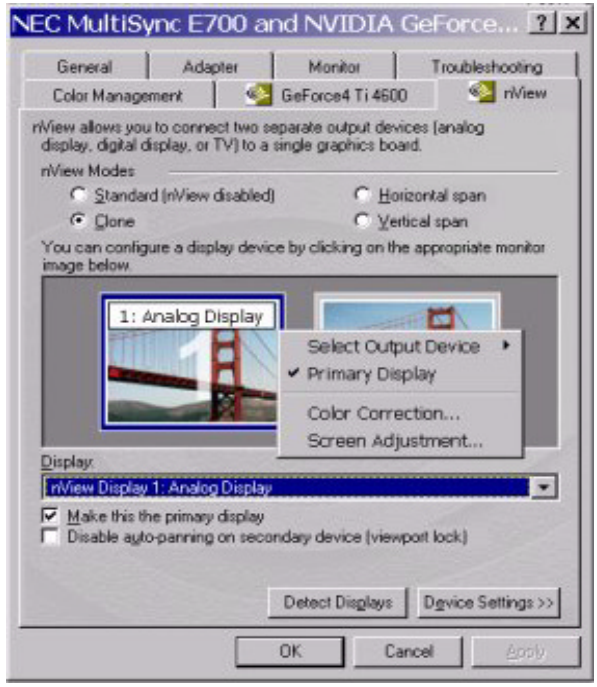


Figure 6.9 nView Device Selection Page: Display 1=Analog Monitor

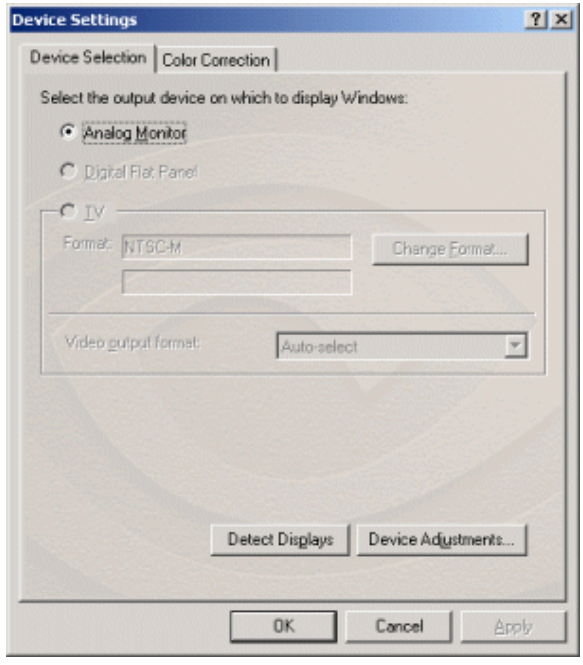


Figure 6.10 nView Clone Mode Context Menu: Display 2 = DFP (Windows 2000/XP)

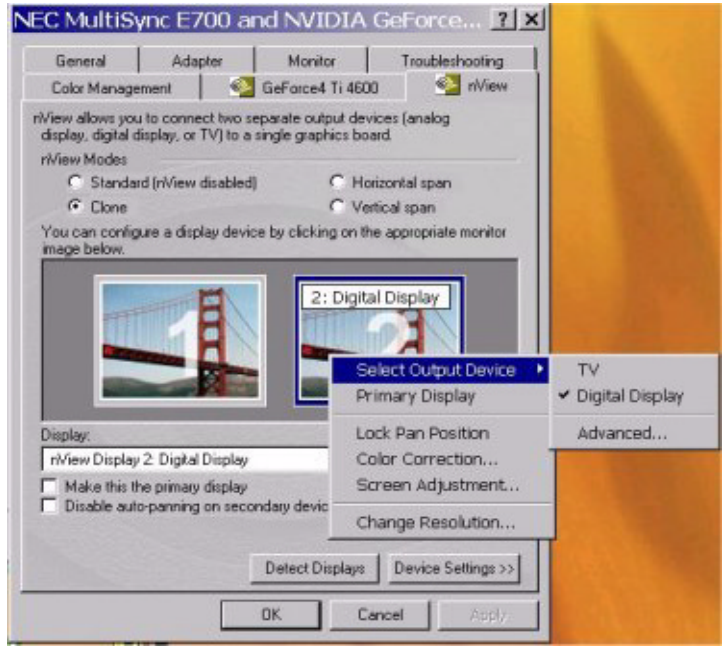


Figure 6.11 nView Device Selection Page: Display 2 = DFP

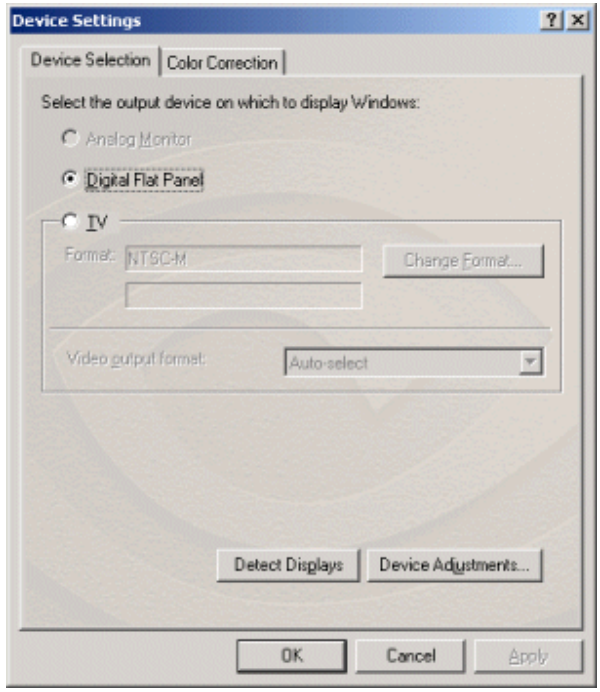


Figure 6.12 nView Clone Mode Context Menu: Display 2 = TV (Windows 2000/XP)

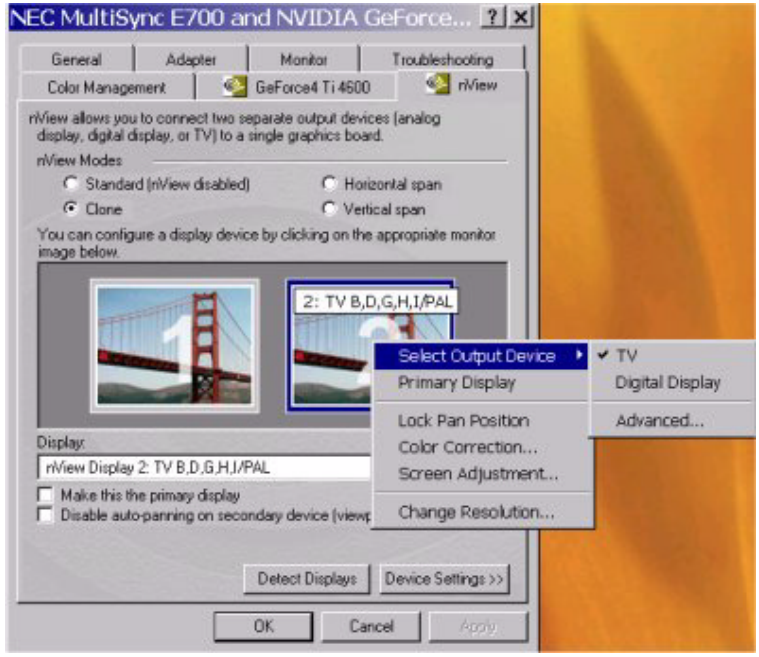
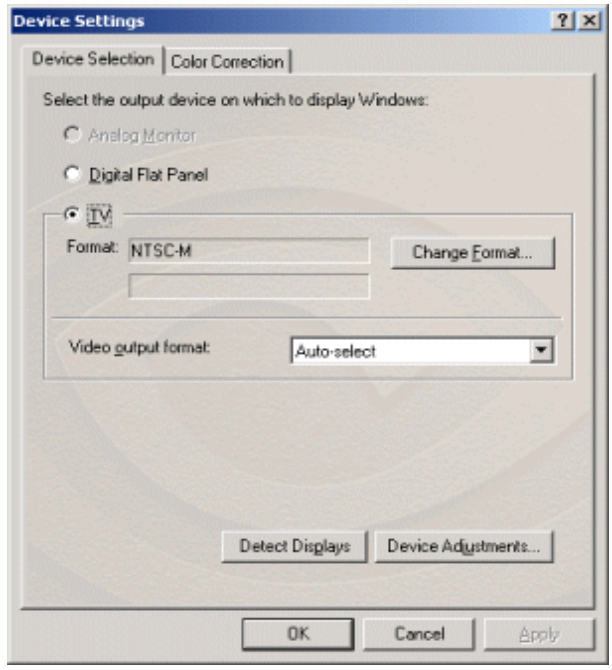


Figure 6.13 nView Device Selection Page: Display 2 =TV



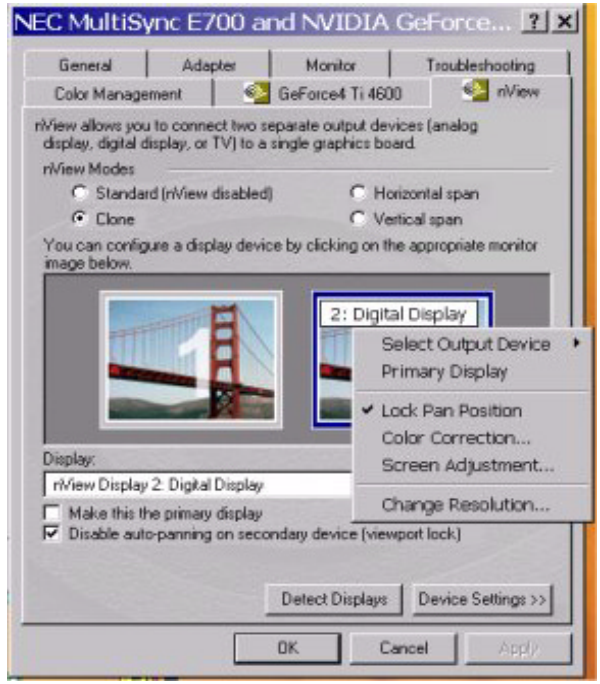
Change Resolution: Clone Mode (Virtual Desktop)

You can use the Change Resolution option to modify **Screen Resolution** and **Refresh Rate** for the secondary display, which allows you to enable **Virtual Desktop**, a useful feature for panels and monitors with limited resolution. This feature lets you pan-and-scan the entire desktop area on the secondary display when its resolution is set to less than the value set on the primary display.

Figure 6.14 shows the context menu (right click the monitor icon to display the context menu) for the secondary display, which is a digital flat panel in this example.

Note: *Notice that the **Lock Pan Position** option is enabled on this menu. This is the same option as the "**Disable auto-panning on the secondary device (viewport lock)**" check box at the bottom of the nView page, which is also enabled. This feature locks the current pan position on the secondary clone display, letting you effectively freeze the virtual desktop at a certain position, which is useful for presentations or fine-detail work in applications.*

Figure 6.14 nView Clone Mode Menu: Display 2 = DFP (Windows 2000/XP)



Note: *If the maximum resolution of the secondary display is less than the current resolution of the primary display, once you enable Clone mode from the nView page, Virtual Desktop will already be enabled. However,*

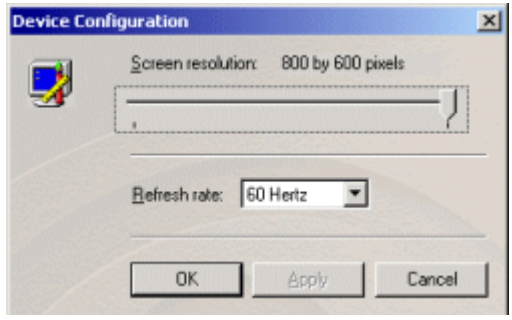
you still may want to adjust the resolutions of the primary and/or secondary device by using the Device Configuration dialog box shown below for the secondary display or the Windows Settings page of your primary display.

Follow these steps to enable Virtual Desktop:

1 From the nView page, right click monitor icon **2** (secondary display) to display the context menu and select **Change Resolution** to display the Device Configuration dialog box.

Note: *If you do not see the Change Resolution option on the display 2 context menu, adjust (increase) the resolution on the primary display until the Change Resolution option becomes available from the display 2 context menu.*

Figure 6.15 nView Clone Mode Device Configuration



2 Use the slider (Figure 6.15) to set the screen resolution at a value that *is not equal* to the screen resolution on the Windows Settings page of your primary display.

Note: *If you set the same screen resolution value for both primary and secondary displays, you cannot pan/scan the desktop area on the secondary display; both displays will remain static.*

3 *Optional*: If you want, you can select a refresh rate from the list box

4 Click **Apply** and **OK**. Notice that the resolution of your secondary display changes and you can use your mouse to pan and scan the desktop on this secondary display.

Horizontal & Vertical Span Modes

Note: *Span modes do not work if you have only one display device attached.*

In Span mode, the Windows desktop area is spread across both display devices. This mode can be set for multiple categories of displays, although display limitations may override the capabilities of your NVIDIA multi-display graphics card. For example, if the second display is an NTSC TV monitor, depending on the TV encoder on the graphics card, the resolution may not be set above 800 x 600 and the refresh rate cannot be set above 60 Hz. However, the PC monitor in such a configuration may have its refresh rate and resolution set much higher. The desktop may be "stretched" horizontally or "stacked" vertically, depending on user needs.

Due to operating system differences between Windows 9*x* and Windows NT 4.0/Windows 2000, the latter does not currently offer true multi-monitor support for Span mode using one NVIDIA multi-display graphics card [1]. As a result, the size of the actual desktop is limited to twice the smaller size of the two displays.

Note: *The desktop can be extended either horizontally (*Figure 6.16 *through* Figure 6.20*) or vertically (*Figure 6.21 *and* Figure 6.23*).*

To access the nView Span modes, follow these steps:

1. Click the **Horizontal** or **Vertical Span** mode option on the nView page and click **Apply**.
2. Click **OK** and **Yes** when the messages appear.
   - If you just switched from Standard to one of the Span modes, your DFP or TV display will be activated. If needed, click **Detect Displays** to enable the display devices.
   - If you just switched from Clone to one of the Span modes, the Windows display on the Clone device will be removed.
3. Depending on whether you have Horizontal or Vertical Span mode enabled, you can drag your active windows, images, or icons horizontally or vertically to move them to the secondary display.

1. If two graphics cards are installed, the Windows 2000 operating system does detect two devices

Figure 6.16 nView Horizontal Span: Display 1= CRT (Windows 2000/XP)

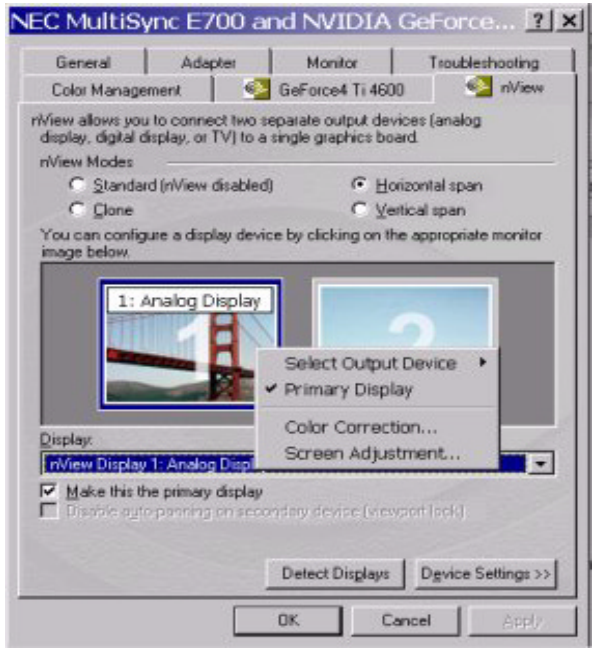


Figure 6.17 nView Horizontal Span Mode: Display 2 = DFP (Windows 2000/XP)

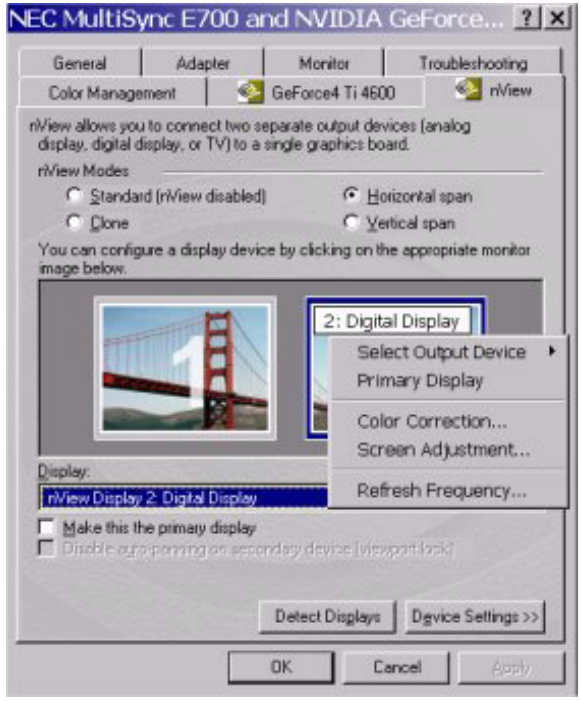


Figure 6.18 nView Horizontal Span Mode: Display 1= CRT (Windows 2000/XP)

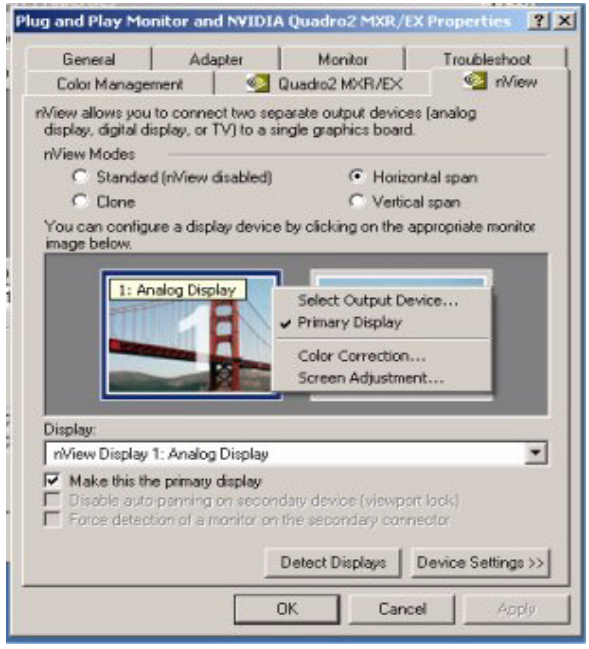


Figure 6.19 nView Horizontal Span Mode: Display 2 = TV (Windows 2000/XP)

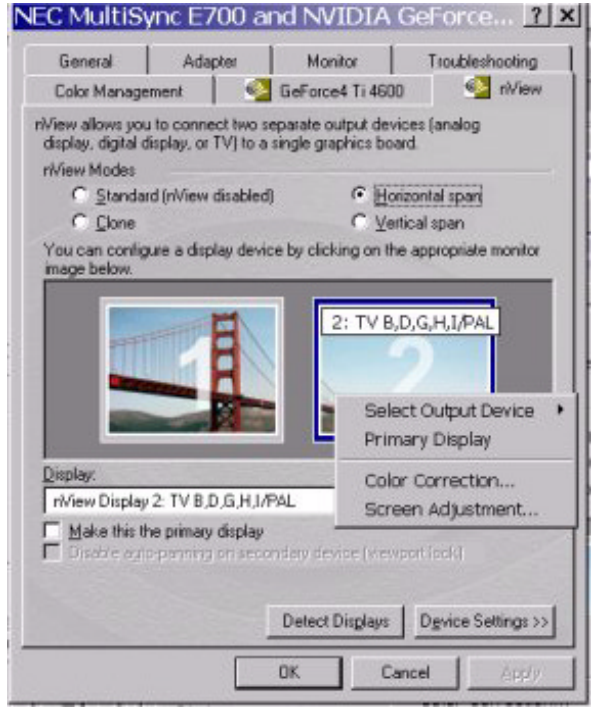


Figure 6.20 nView Horizontal Span (Display 1= TV): Windows 2000/XP

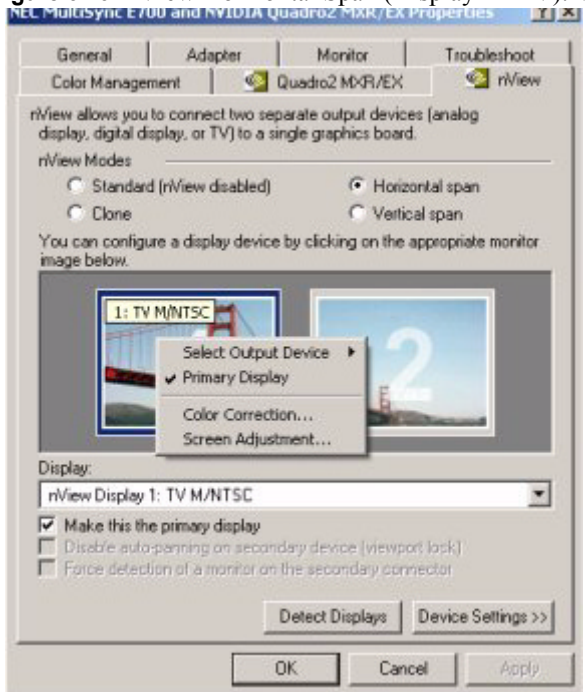


Figure 6.21 nView Vertical Span Mode (Display 1= CRT): Windows 2000/XP

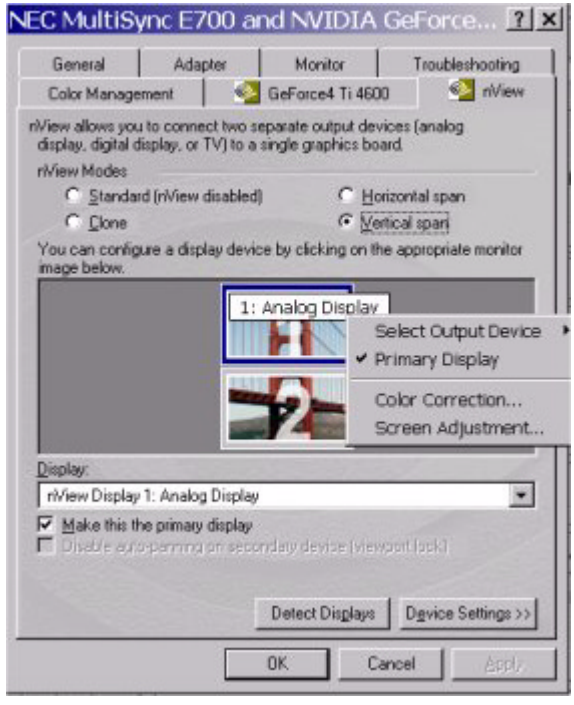


Figure 6.22 nView Vertical Span Mode: Display 1= DFP (Windows 2000/XP)

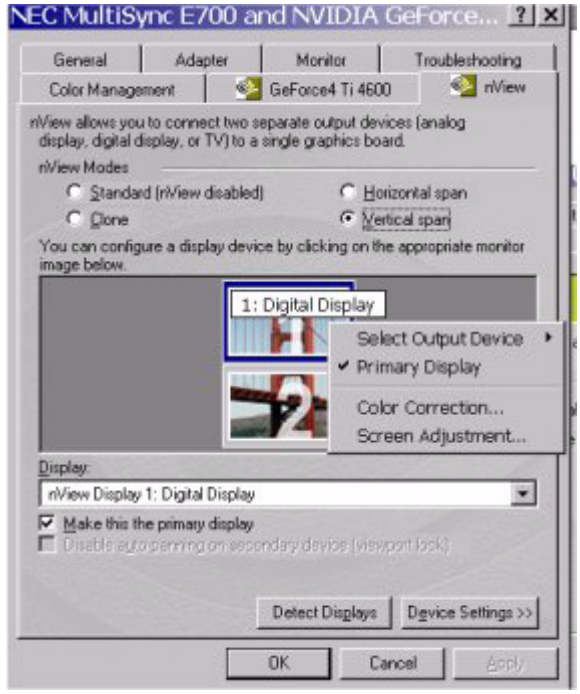
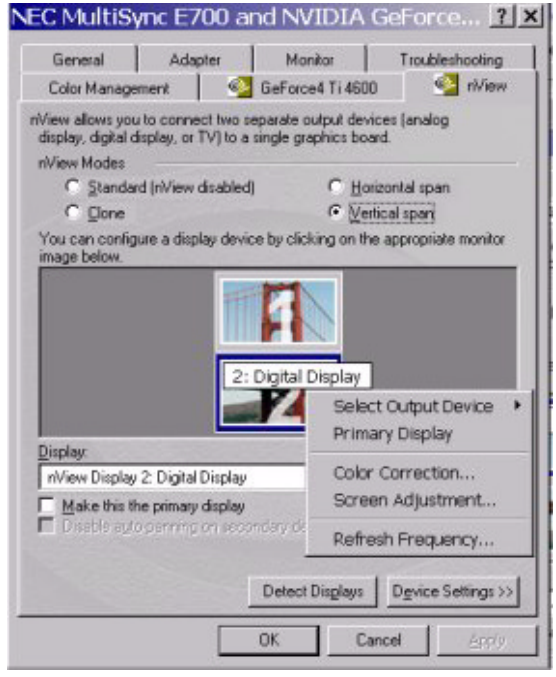


Figure 6.23 nView Vertical Span Mode: Display 2 = DFP (Windows 2000/XP)



Extended Desktop: Windows 98/Me

The Windows Extended Desktop feature is supported by any multi-display NVIDIA GPU-based graphics card.

Notes:

- *Extended Desktop mode is not supported under Windows 95.*
- *Under Windows Extended Desktop mode, when you switch to a full-screen Microsoft DOS window or boot to a DOS prompt, the display is limited to the primary display device.*
- *Under Extended Desktop mode, OpenGL-based applications will only run using Microsoft's software rendering implementation of OpenGL. This is due to a design limitation within Windows.*

Follow these steps to enable Windows Extended Desktop mode:

1. Make sure you have more than one device attached to your multi-display graphics card.
2. Right click on your Windows desktop and click **Properties** > **Settings** tab. You will see the Settings page with two monitor icons, as shown in Figure 6.24.

   Note: *If you are using an NVIDIA multi-display card* ***but have only one display device connected*** *(such as a CRT), you will see two monitor icons on the Settings page even though only one display device is connected; you cannot enable the second display until you physically connect a second display device to the graphics card.*
3. Right click monitor icon **2** (Figure 6.25) and click **Enable** to check the option (Figure 6.26).

   Note: *If you get a Compatibility Warning message, read the message carefully. Then click* ***OK***

   Notice that the "**Extend my Windows desktop onto this monitor**" check box becomes checked (Figure 6.26).
4. Click **Apply**. For details on configuring Extended Desktop, see "Configuring Extended Desktop" on page 58.
5. Click **Advanced**. Notice that the nView tab is not available when Extended Desktop is enabled (Figure 6.27).

Figure 6.24 Display Settings: Windows 98

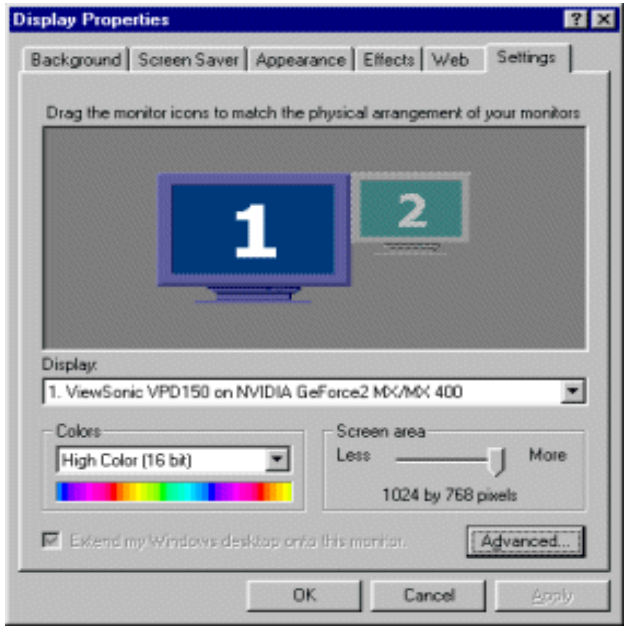


Figure 6.25 Enabling Extended Desktop (1): Windows 98

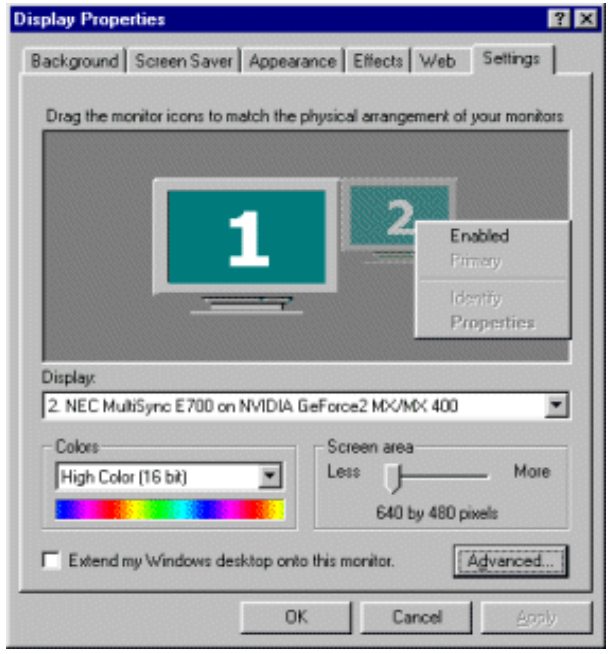


Figure 6.26 Enabling Extended Desktop (2): Windows 98

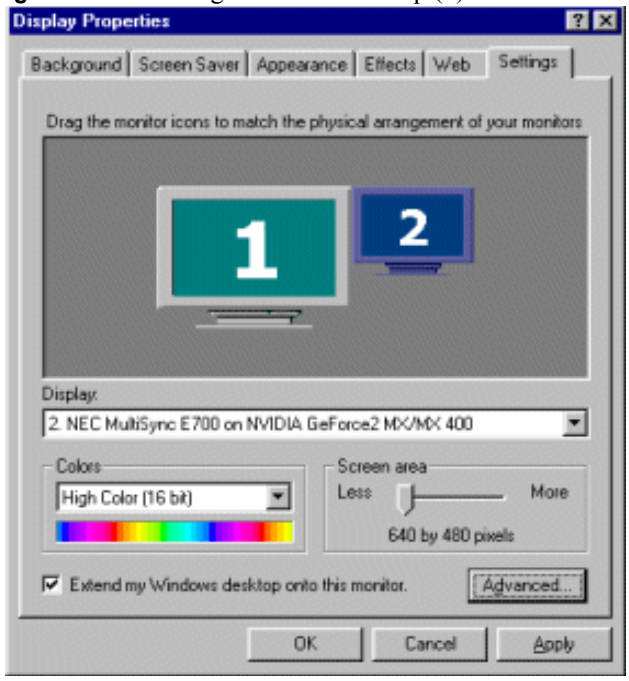
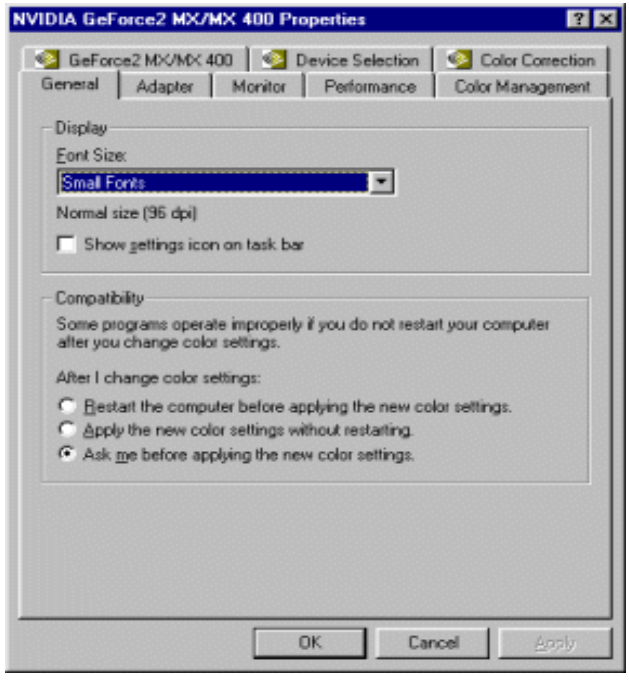


Figure 6.27 nView Tab Disabled: Windows 98



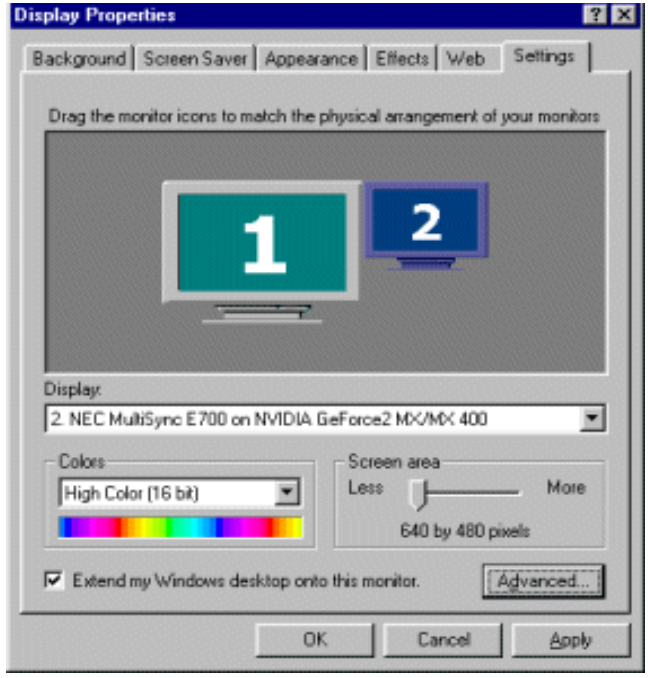
Configuring Extended Desktop

In Windows Extended Desktop mode, the desktop area is spread across two displays. This mode can be set for multiple categories of displays, although display limitations may override the capabilities of your NVIDIA multi-display graphics card. For example, if the second display is an NTSC TV monitor, depending on the TV encoder on the graphics card, the resolution may not be set above 800 x 600 and the refresh rate cannot be set above 60 Hz. However, the PC monitor in such a configuration may have its refresh rate and resolution set much higher. The desktop can be extended horizontally, vertically, as well as at other angles by repositioning the desktop display icons in the Windows Settings page.

You can drag the icons to the positions that represent how you want to move items between monitors.

- For example, if you're using two monitors and you want to **move items from one monitor to the other by dragging left and right**, position the icons side-by-side (Figure 6.28).

Figure 6.28 Display Settings (Horizontal): Windows 98



- **To move items between monitors by dragging up and down**, position the icons one above the other (Figure 6.29).

Figure 6.29 Display Settings (Vertical): Windows 98

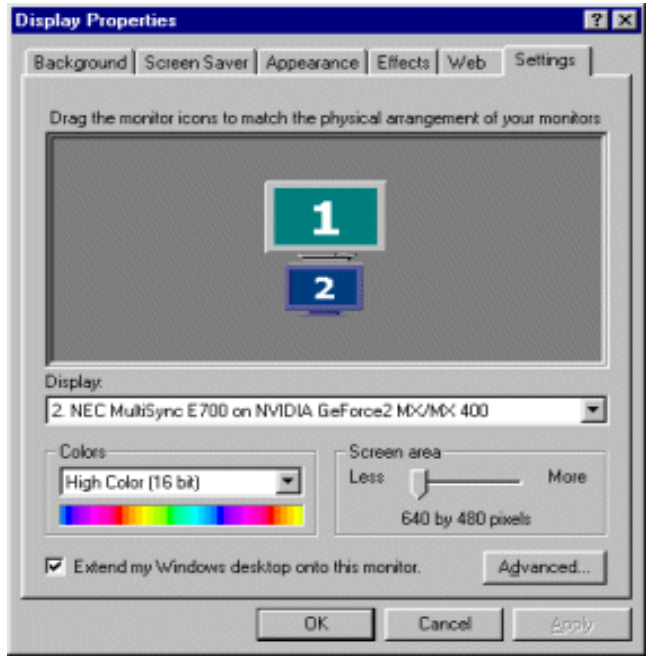
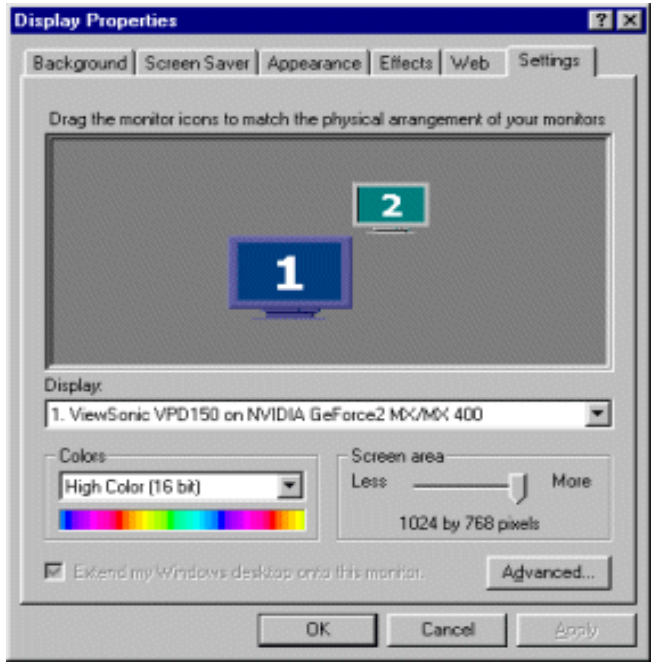


Figure 6.30 Display Settings (Diagonal): Windows 98



- **To move items between monitors by dragging at an angle**, position the icons diagonally (Figure 6.30). The icon positions don't have to correspond to the physical positions of your monitors. That is, you can position the icons one above the other even though your monitors are side-by-side.

Other Configuration Options

For details on configuring display devices, such as a TV, see "Device Selection And Configuration" on page 61.

For details on configuring additional features, see "Additional Features and Enhancements" on page 91

CHAPTER 7

DEVICE SELECTION AND CONFIGURATION

This chapter contains the following major sections:

Switching Displays From the nView Page

If you have the nView page enabled and have multiple display devices connected to your computer, you can very easily switch between them by clicking on the monitor icon.

Switching Displays

1. Right click on the monitor icon of the secondary display device (2) if you are in Span or Clone mode; or, if you are in Standard mode, simply right click on the single monitor icon that appears.
2. Click **Select Output Device.**
3. Then click the display device you want to switch to.
4. When you see the messages in Figure 7.1 and Figure 7.2, click **OK** and **Yes** to continue.

Figure 7.1 Display Settings Message

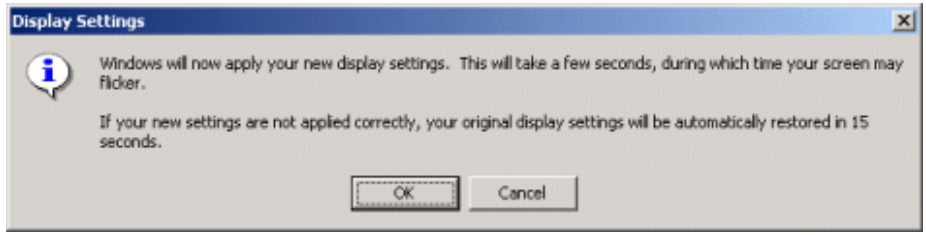


Figure 7.2 Confirm Display Settings Message

Switching Secondary to Primary Display: nView Clone or Span Modes

Note: *The example in this section changes a digital flat panel display device from a secondary to a primary display. You can use a similar procedure to change TV, CRT, or any other type of display from a secondary to a primary display, or vice versa.*

1. Make sure you have the nView page open in Clone or Span mode.
2. Right click monitor icon **2** to display the context menu, then move the cursor to the **Select Output Device .** .option to confirm that **Digital Display** is enabled (Figure 7.3).
3. Right click monitor icon **2** to display the context menu, then click **Primary Display**. The “Make this the primary display” check box becomes checked.
4. Click **Apply**.
5. When the NVIDIA Display Settings message appears (Figure 7.1), click **OK** *before* the message times out.
6. When the Confirm Display Settings message appears (Figure 7.2), click **Yes** *before* the message times out.

   The Digital Flat Panel display is now enabled as the Primary display (Figure 7.4).

Figure 7.3 nView Horizontal Span Mode: Display 2 = DFP (Windows 2000/XP)

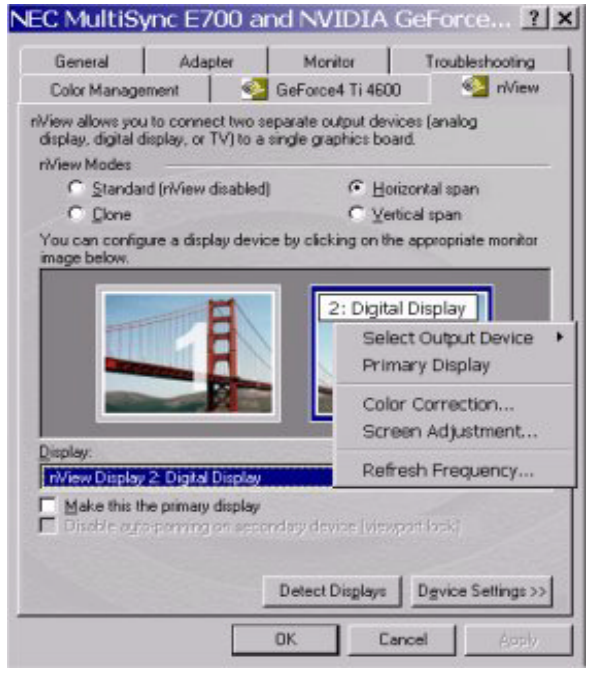


Figure 7.4 nView Clone Mode (DFP as Primary): Windows 2000/XP

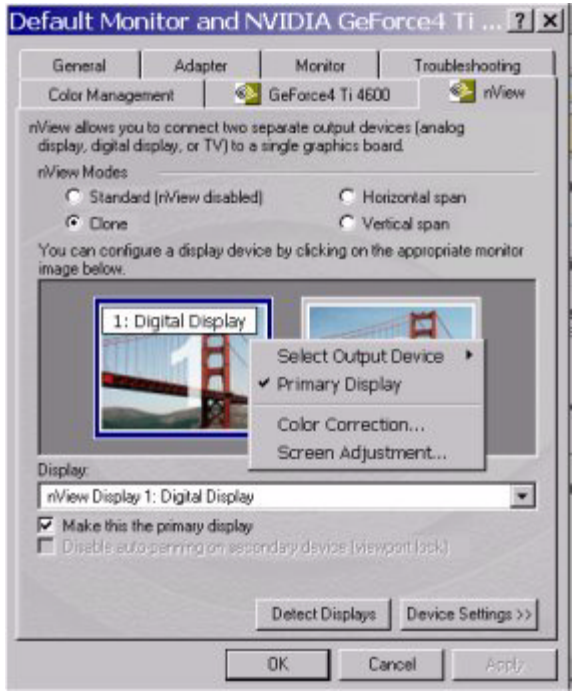


Figure 7.5 nView Clone Mode (CRT is secondary display): Windows 2000/XP

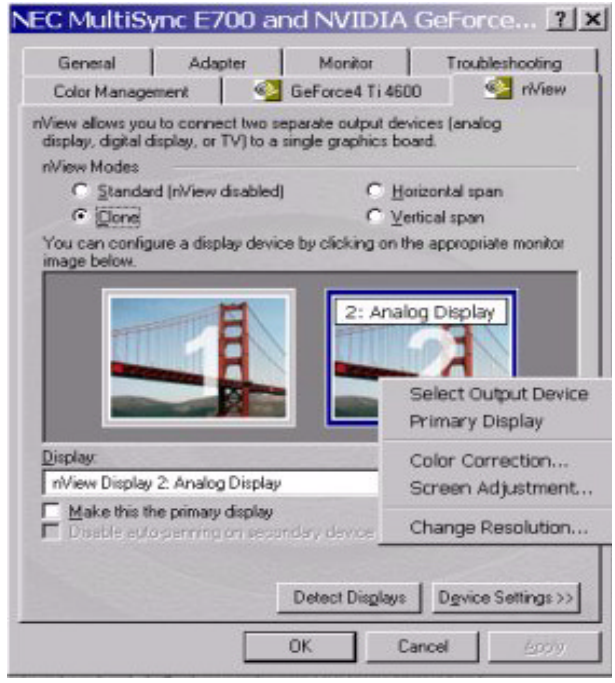


Figure 7.6 nView Horizontal Span: Display 1= CRT (Windows 2000/XP)

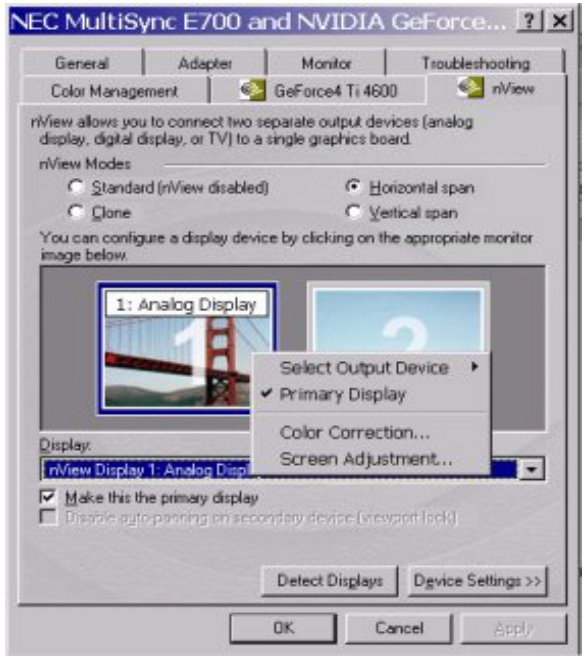


Figure 7.7 nView Horizontal Span Mode: Display 2 = TV (Windows 2000/XP)

Figure 7.8 nView Horizontal Span (Display 1= TV): Windows 2000/XP

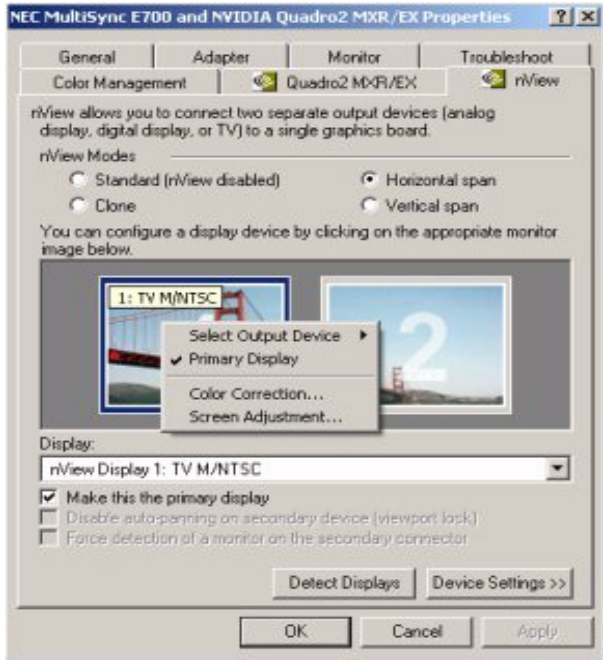


Figure 7.9 nView Vertical Span Mode: Display 1= CRT (Windows 2000/XP)

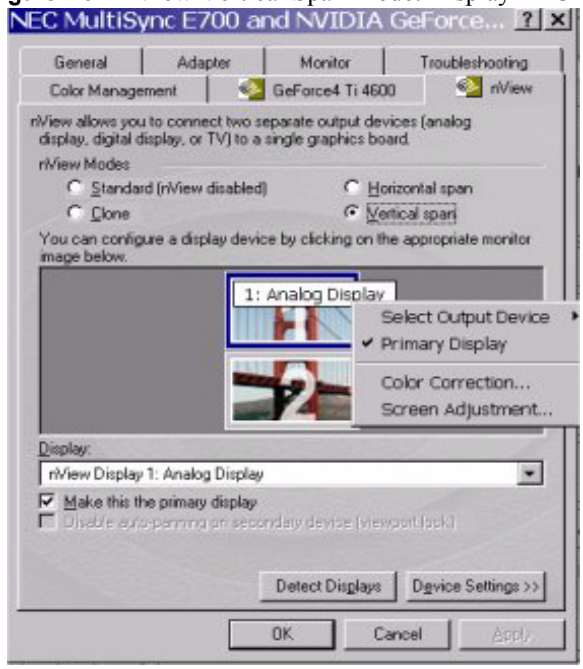


Figure 7.10 nView Vertical Span Mode: Display 1= DFP (Windows 2000/XP)

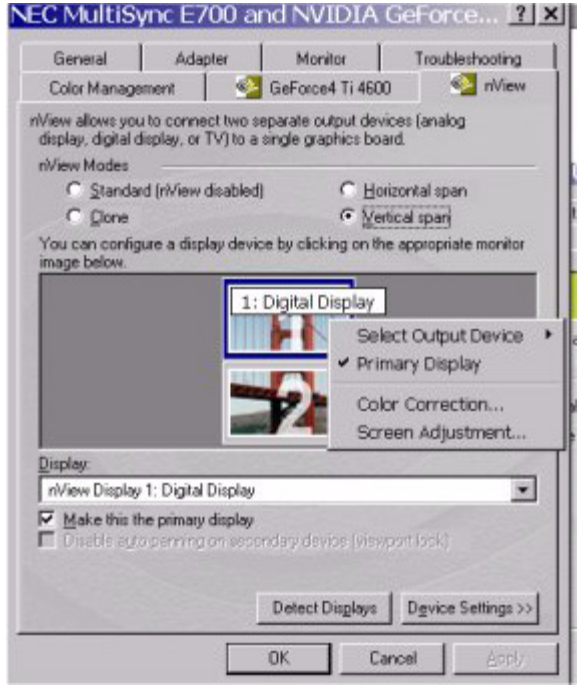
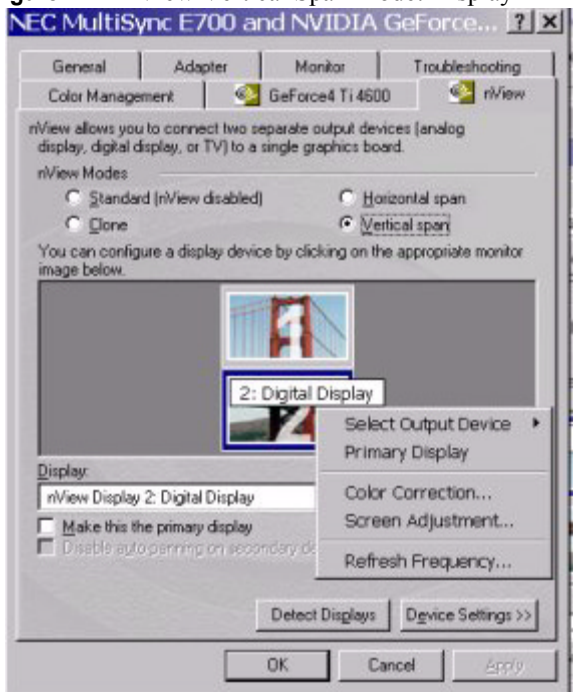


Figure 7.11 nView Vertical Span Mode: Display 2 = DFP (Windows 2000/XP)



Switching Displays With nView Disabled

Note: *This chapter assumes that you have you have at least two display devices connected to your graphics card. You can use the basic procedure described here to switch between any devices that are connected.*

When you are outside the nView page or do not have nView enabled but have the NVIDIA Detonator XP Display Driver software installed, you can use the following procedure to switch displays.

1. Right click from your Windows desktop and click **Properties** and the **Settings** tab to display the Settings page (Figure 7.12).
2. Click **Advanced**.
3. Click the **Device Selection** tab to display the Device Selection page. This example uses the GeForce3 GPU-based card (Figure 7.13) with Analog Monitor (CRT) enabled.
4. Click **Detect Displays** if you want to detect all display devices connected to the output device (Analog Monitor, Digital Flat Panel, or TV) that is enabled on the Device Selection page. Use this feature if you have plugged in any displays after this Device Selection page was opened.

Figure 7.12 Display Properties Settings

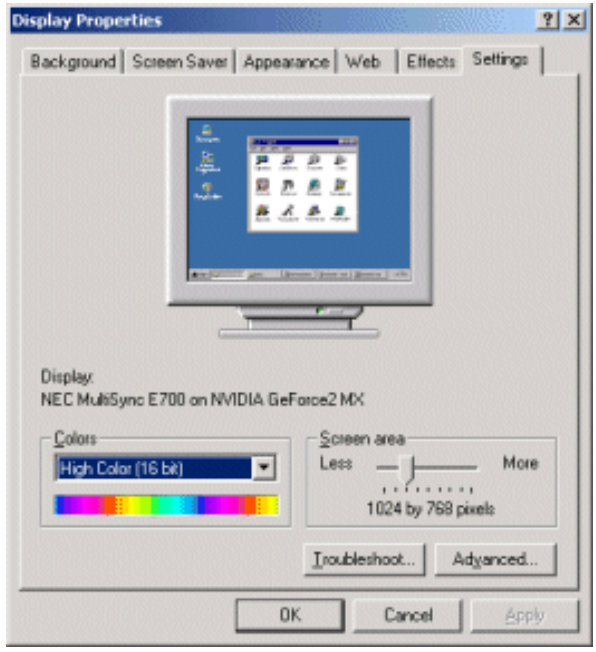


Figure 7.13 Device Selection (Single Display)

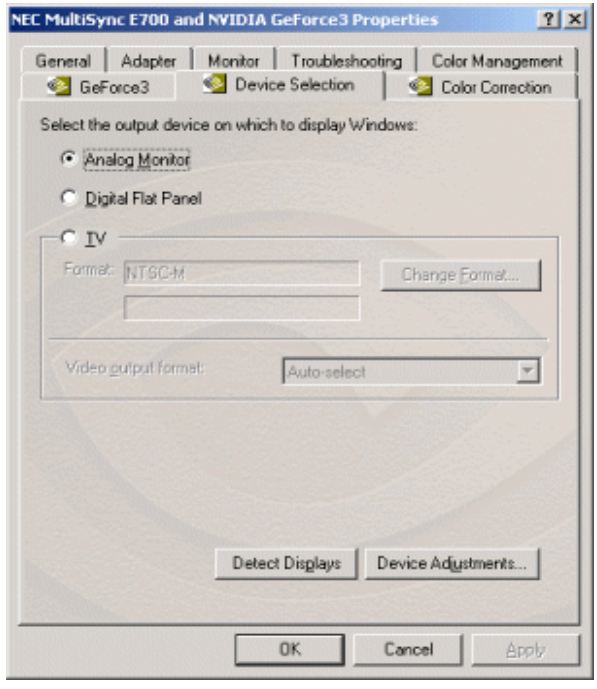


Figure 7.14 Device Selection CRT (nView)

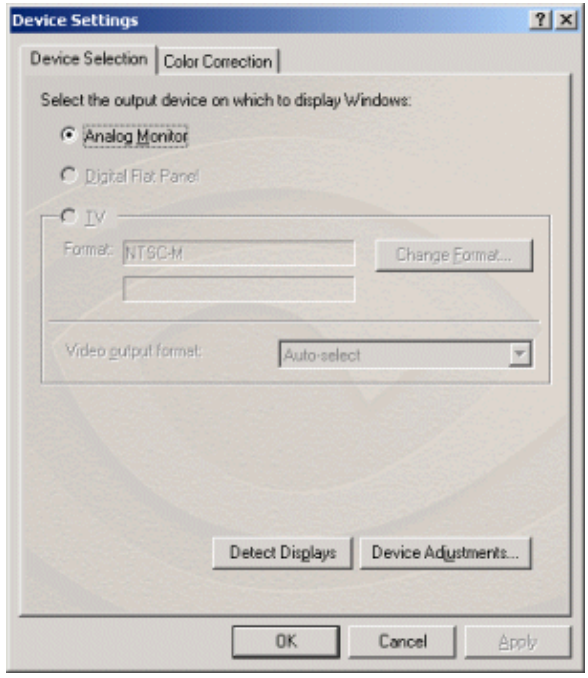


Figure 7.15 Device Selection with DFP Enabled (nView)

Figure 7.16 Device Selection Page with TV Enabled (nView)

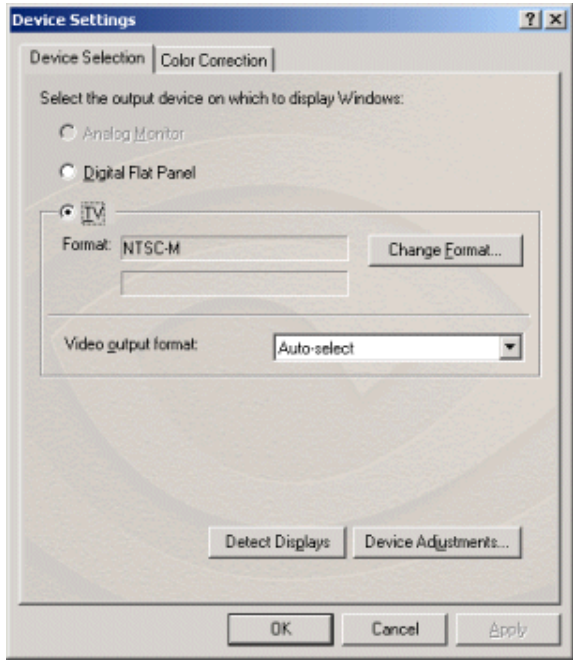
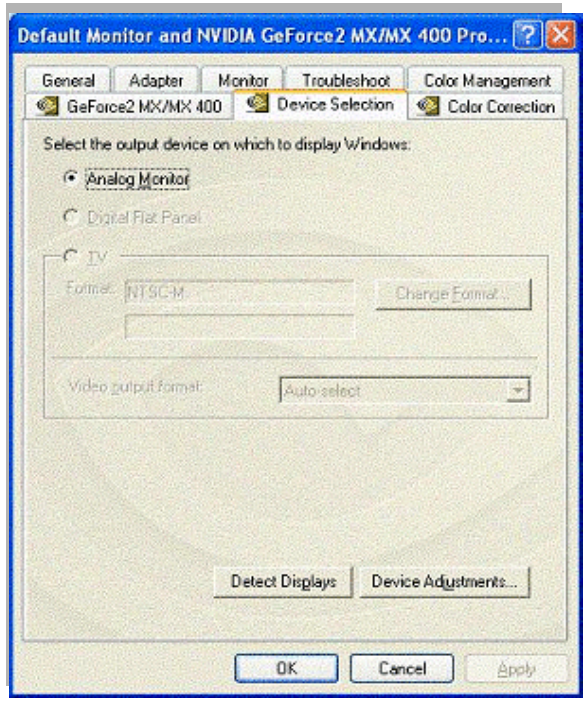


Figure 7.17 Device Selection: Windows XP Dualview Enabled



Switching Displays: An Example

Note: *This section explains the procedure for switching the display from your CRT to a DFP using the example of a GeForce3 GPU-based graphics card with three connectors:*

- **CRT** (analog monitor)
- **DFP** (digital flat panel) *and*
- **TV**

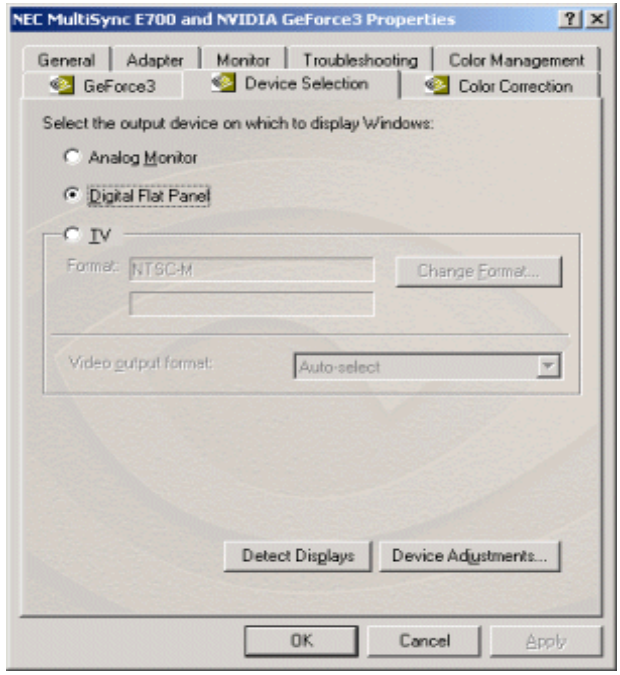
This means that the user of such a graphics card can choose to connect three different devices and switch among them or simply connect one of the devices and use that device. Your GeForce3 GPU-based graphics card or any other multi-connector NVIDIA GPU-based card may have anywhere between one and three connectors. So, you'll need to follow the example based on the number and type of connectors your card contains.

Note: *You can use the procedure in this section to switch between any combination of devices, such as CRT to TV, TV to CRT, DFP to CRT, TV to DFP, and so on.*

1 Make sure you are in the Device Selection page.

2 Click the **Digital Flat Panel** Option and click **Apply** (Figure 7.18).

Figure 7.18 Device Selection with DFP Enabled (non-nView)



3 When the “Device Settings” message (Figure 7.1) appears, click **OK** *before* the message times out.

The “Confirm Display Settings” message now appears on the Digital Flat Panel (DFP) display (Figure 7.2).

4 Click **Yes** before the message times out. Your entire Windows desktop now shifts to the DFP display.

Device Adjustments: Analog Monitor

Screen Adjustment

If your NVIDIA GPU-based graphics card is connected to a CRT (Analog Monitor), follow these steps to access the Screen Adjustment page:

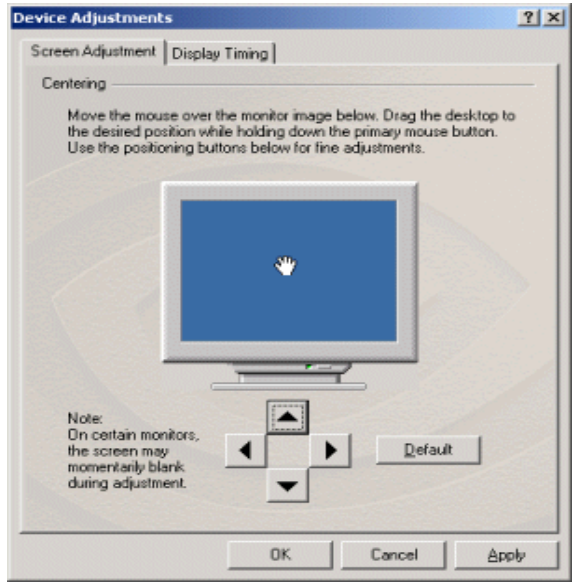
Note: *If you are in the nView page, right click the monitor icon to display the context menu and choose* ***Screen Adjustment*** *to display the Screen Adjustment page. Then go directly to step.* ***4*** *below.*

1 Make sure you are in the Device Selection page.

2 Confirm that the **Analog Monitor** option is selected on the Device Selection page.

3 Click **Device Adjustments** to access the Screen Adjustment page (Figure 7.19).

Figure 7.19 Screen Adjustments: Analog Monitor



4 To adjust the screen position, move the mouse over the monitor icon and drag the desktop to the desired position while holding down the primary mouse button. Use the arrow positioning buttons for fine adjustments.

Display Timing

If your NVIDIA GPU-based graphics card is connected to a CRT (Analog Monitor), follow these steps to access the Display Timing page:

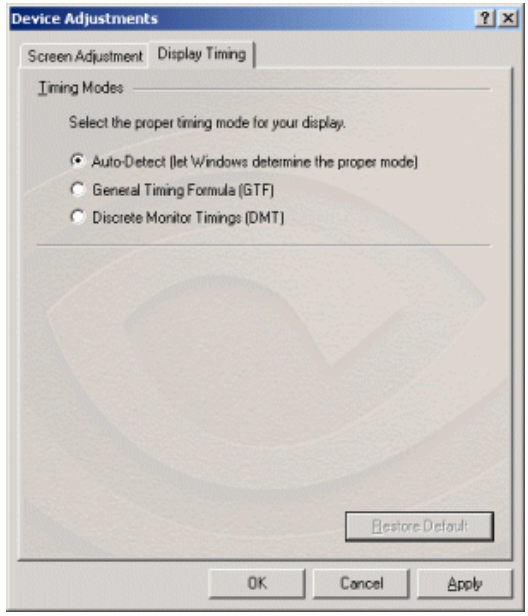
Note: *If you are in the nView page, right click the monitor icon to display the context menu and select* ***Screen Adjustment*** *to display the Screen Adjustment page. Then click the* ***Display Timing*** *tab to open the Display Timing page and go directly to step.* ***4*** *below.*

1 Make sure you are in the Device Selection page.

2 Confirm that the **Analog Monitor** option is selected on the Device Selection page.

3 Click **Device Adjustments** then click the **Display Timing** tab to open the Display Timing page.

Figure 7.20 Display Timing: Analog Monitor



4 Select the proper timing mode for your display:

- **Auto-Detect** (*default setting*) allows Windows to receive the proper timing information directly from the monitor itself. **Note** that some older monitors may not support this feature.

- **General Timing Formula** (GTF) is a standard used by most newer hardware.
- **Discrete Monitor Timings** (DMT) is an older standard still in use on some hardware. Enable this option if your hardware requires DMT.

Device Adjustments: Digital Flat Panel

Flat Panel Display

If your NVIDIA GPU-based graphics card is connected to a DFP (digital flat panel), follow these steps to access the Flat Panel Display page.

Note: *If you are in the nView page, right click the Digital Flat Panel icon and select* ***Screen Adjustment*** *to display the Flat Panel Display page. Then go directly to step.* ***4*** *below.*

1. Make sure you are in the Device Selection page.
2. Confirm that the **Digital Flat Panel** option is selected on the Device Selection page.
3. Click **Device Adjustments** to access the Flat Panel Display page (Figure 7.21).

Figure 7.21 Flat Panel Display Page: Display = 1

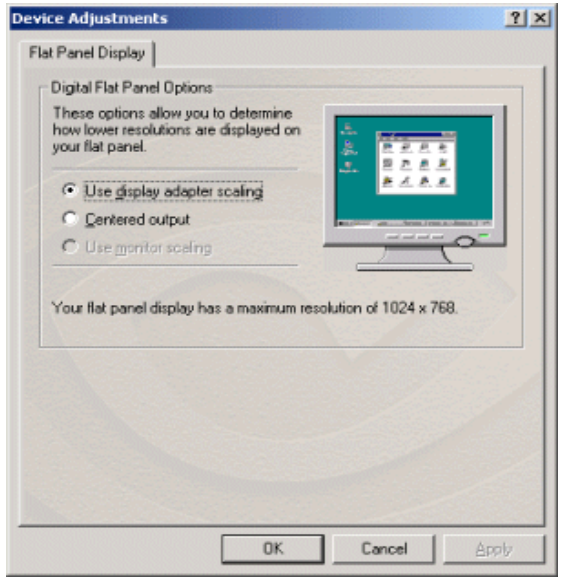
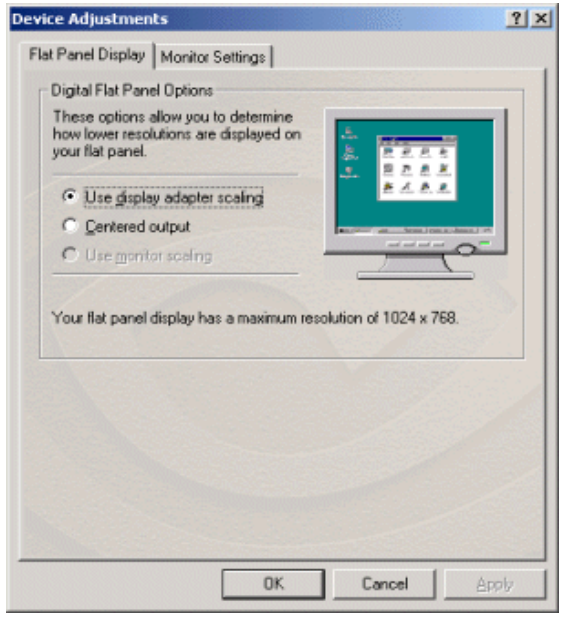
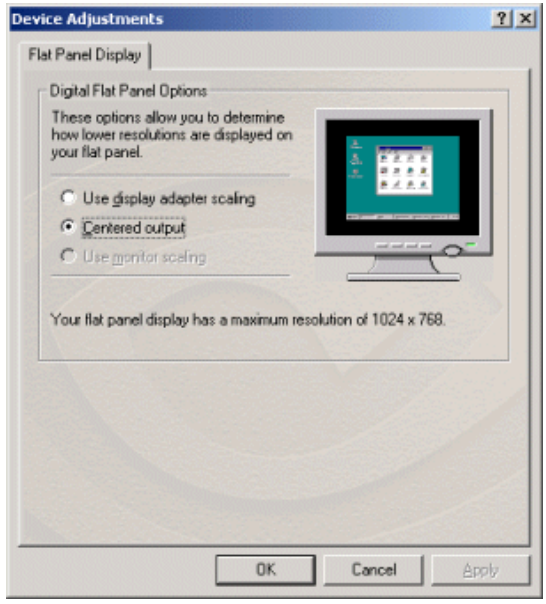


Figure 7.22 Flat Panel Display Page: Display = 2



4 You can use the options **Use display adapter scaling** and **Centered Output** to determine the placement of the image on your flat panel display when running at resolutions lower than the maximum supported resolution.

Figure 7.23 Digital Flat Panel Display - Centered Output



Note: *The **Use monitor scaling** option is available for flat panels that support multiple native resolutions.*

Monitor Settings (Refresh Frequency): Secondary Display

Note: *The Monitor Settings option only appears for the secondary display device (Display 2), if the secondary device is a DFP or CRT (analog monitor). In this example, the secondary display device is a DFP.*

Follow these steps to modify the Refresh Frequency of your secondary display device:

Note: *If you are in the nView page, right click the Digital Flat Panel icon and select **Screen Adjustment** to display the Flat Panel Display page, click **Monitor Settings** to open the Monitor Settings page, then go directly to step. **4** below.*

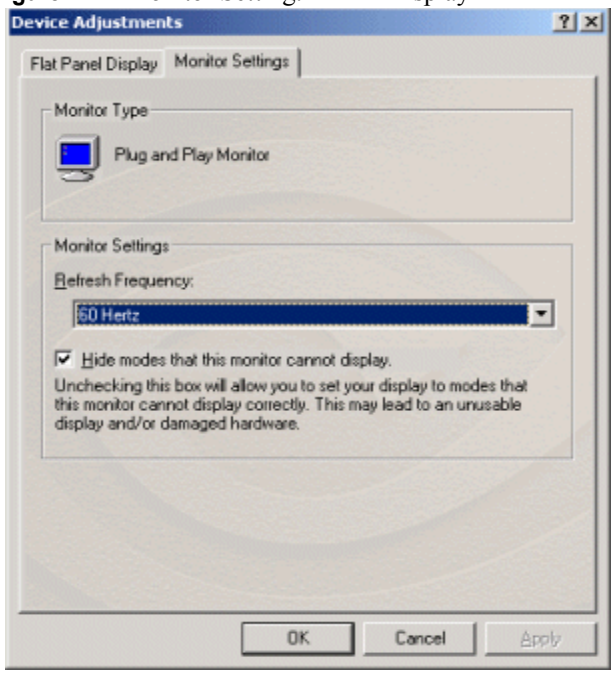
1. Make sure you are in the Device Selection page.
2. Confirm that the **Digital Flat Panel** option is selected on the Device Selection page.
3. Click **Device Adjustments** to access the Flat Panel Display page.
4. Click **Monitor Settings** to open the Monitor Settings page (Figure 7.24).

   Note: *The Monitor Settings page in Figure 7.24 resembles the Monitor page for your primary display (**Properties** > **Settings** > **Advanced** > **Monitor** tab) but actually represents your secondary display.*

   The Refresh Frequency list box lists the refresh rates available for this monitor. You may select a different refresh rate than the one that appears in the list box. A higher refresh frequency reduces flicker on your screen.

   Note: *It is recommend that you keep the **Hide modes that this monitor cannot display** option checked. Unchecking the option will allow you to set your display to modes that this monitor cannot display correctly, which may lead to an unusable display an/or damaged hardware. Also, unchecking this option will prevent enabling nView Span modes.*

Figure 7.24 Monitor Setting: DFP = Display 2



TV Settings

This section explains the TV formats and settings available on the Output Device page accessible through the nView page.

Note: *The TV formats and settings are also supported on single-display NVIDIA GPU-based cards.*

Note: *Depending on the TV encoder that is used on your NVIDIA graphics card, certain TV features on the nView Device Selection page may be unavailable or vary from what is described in this appendix.*

Accessing the TV Option in Non-nView Mode

If your NVIDIA graphics card is connected to a TV, follow these steps to access the TV configuration options:

Note: *If you are in the nView page, right click the TV monitor icon and click* ***Select Output Device*** *to display the Device Selection page with the TV option enabled, as shown in* Figure 7.25.

1 Make sure you are in the Device Selection page.

2 Make sure the **TV** option is selected. Figure 7.25 shows the Device Selection page with the TV option enabled.

Change Format: Regional Settings

From the Device Selection page, click **Change Format** to access the Regional Settings (Figure 7.26) where you can specify a particular TV output format. The list that appears allows you to select the TV output format based on the country where you live.

Note: *If your country is not in the list, select the country closest to your location.*

Video Output Format

The Video Output Format field lets you specify the type of output signal sent to the TV. The default setting is **Auto-select**

If you want to select **S-Video-Out** or **Composite Video-Out**, click the down arrow on the Video Output Format field and select the format (Figure 7.27).

If you have the proper connector cable, **S-Video-Out** will generally provide a higher quality output than **Composite Video-Out**. If you are not sure which type of signal you should specify, choose the **Auto-select** setting.

Figure 7.25 Device Selection with TV Enabled

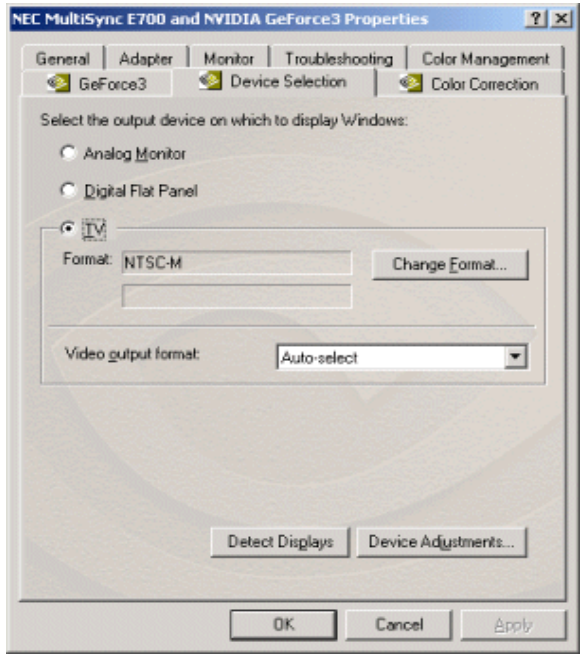


Figure 7.26 TV Regional Settings

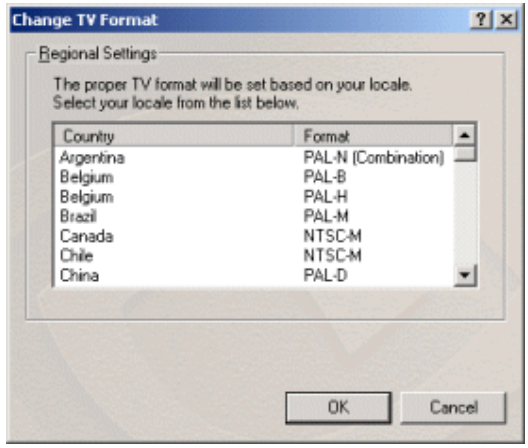
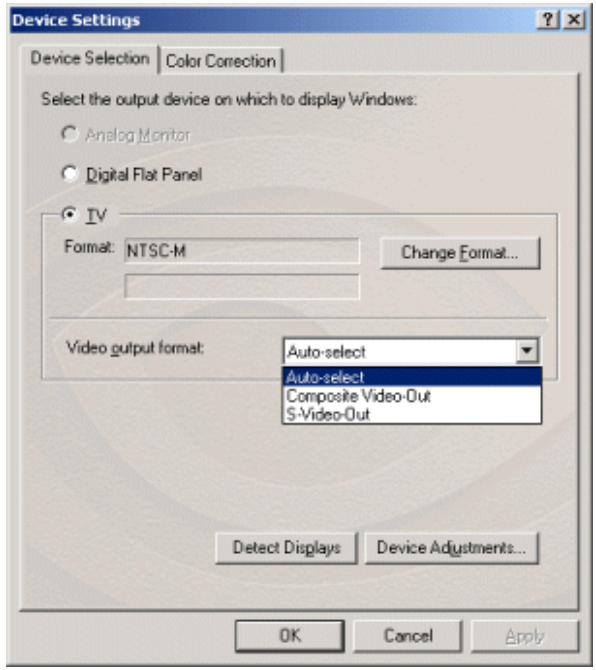


Figure 7.27 Device Selection: TV Video Output Format



Device Adjustments: TV Output

From the Device Selection page, click **Device Adjustments** to open a TV Output page (Figure 7.28) where you can customize the settings for your TV display.

Note: *Be sure to click* ***Apply*** *after you make any changes in order for the changes to take effect.*

- **Screen positioning:** Use the arrow buttons to adjust the position of the desktop on the TV.

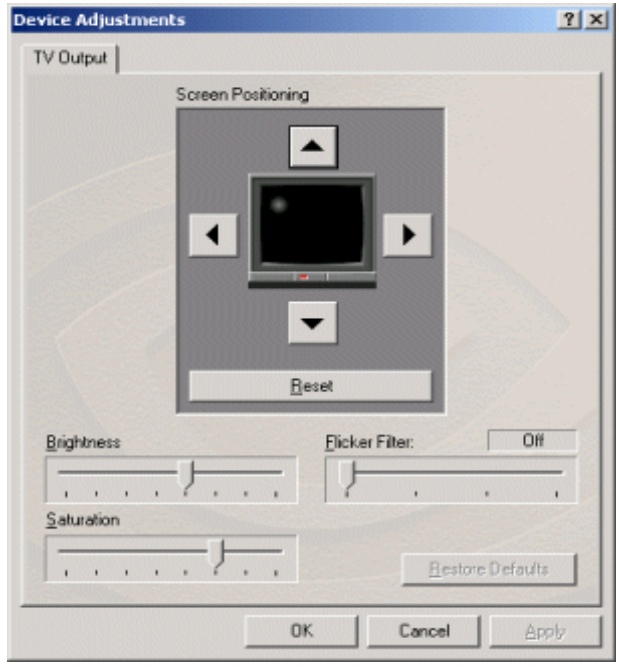
  Note: *If the TV picture becomes scrambled or goes blank due to over-adjustment, simply wait 10 seconds; the picture will automatically return to its default position. Then you can begin your adjustments again. Once you have positioned the desktop where you want it, click* ***OK*** *or* ***Apply*** *to save the settings before the 10 second interval has elapsed.*

- **Brightness/Saturation:** Use these slider controls to adjust the brightness and saturation of the TV image.

- **Flicker Filter:** Use this slider to adjust the amount of flicker filter you want applied to the TV signal.

  Note: *It is recommended that you turn off the flicker filter completely for DVD movie playback from a hardware decoder.*

Figure 7.28 TV Output Page



CHAPTER 8

VIDEO MIRROR

This chapter contains the following major sections:

The Video Mirror feature works in conjunction with nView and is supported by any NVIDIA GPU-based multi-display graphics card.

Video Mirror allows a video or DVD application to mirror its playback in full-screen mode on any one of the connected display devices. (For sample combinations of display devices that are supported, see relevant text in "nView Applications" on page 17.)

Major features of Video Mirror, such as Zoom and Aspect Ratio, can be configured through the Full Screen Video Mirror page. The Zoom settings allow part of the image from the primary monitor to be displayed on the secondary monitor, but zoomed in.

Note: If you have only one display device connected to your computer, you will not have Video Mirror functionality but will be able to access the NVIDIA Overlay Control page features, as explained in the "Overlay Controls" on page 82.

Accessing Video Mirror

This section explains how to use the following settings:

To access the Video Mirror page, you need to go through the Overlay Controls page.

The options in the Overlay Controls page can be used on a single video image or display when you are in nView Standard mode. However, the Video Mirror Controls work only when you are in the following modes:

- **Windows XP/2000 nView Clone** or **Windows XP Dualview**

  Note: *Video Mirror is not available under Windows NT 4.0.*

- **Windows 9*x* nView Clone** or **Extended Desktop** (non-nView)

Overlay Controls

Note: *Be sure to click **Apply** whenever you make any changes to the pages. If changes do not take effect (e.g., the controls have no effect on the video) after you click Apply, close the video overlay and then re-open it.*

1. Open the DVD or video application that you want to view.
2. **For Video Mirror functionality**, set your nView page to one of these modes:
   - **Windows XP/2000 Clone** *or* **Windows XP Dualview**
   - **Windows 9*x* Clone** *or* **Extended Desktop**
3. To access the Overlay Controls page, click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **Overlay Controls** tab.

   Figure 8.1 through Figure 8.4 show Overlay Controls pages using examples for GeForce3 and GeForce2 MX GPUs.
4. For description of the Overlay Settings, see "Overlay Settings" on page 83 below.
5. To use the Video Mirror controls, go directly to the next section "Video Mirror Controls" on page 85.

Overlay Settings

- **Check here if you are having problems with your TV tuner (Windows 9*x* only):** Activating this option forces the overlay software to be compatible with busmastering TV Tuner cards.

  Note: *It is recommended that you leave this option unchecked unless you experience problems with video playback, such as image corruption or no video image at all.*

- **Brightness, Contrast, Hue, and Saturation**: You can independently control the **brightness**, **contrast**, **hue**, and **saturation** to achieve optimal image quality when playing back videos or DVD movies on your computer.
- **Enable video overlay zoom:** Click this check box and click **Apply** to use the Zoom control slider to zoom in (out) on a specific area of the video output (overlay) on your screen. Using the diagram of the screen regions shown on the Overlay Controls page, you can select the area of the video screen you would like to zoom. Once selected, you can zoom to that portion of the screen by moving the Zoom Control slider between the Out and In range.

Figure 8.1 Overlay Controls for GeForce3: Windows 2000/XP

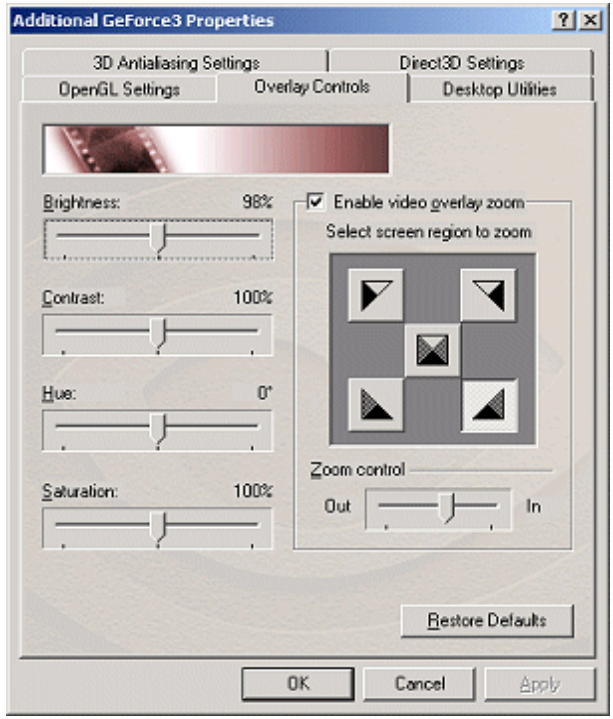


Figure 8.2 Overlay Controls Settings in Single-Display Mode: Windows 2000/XP

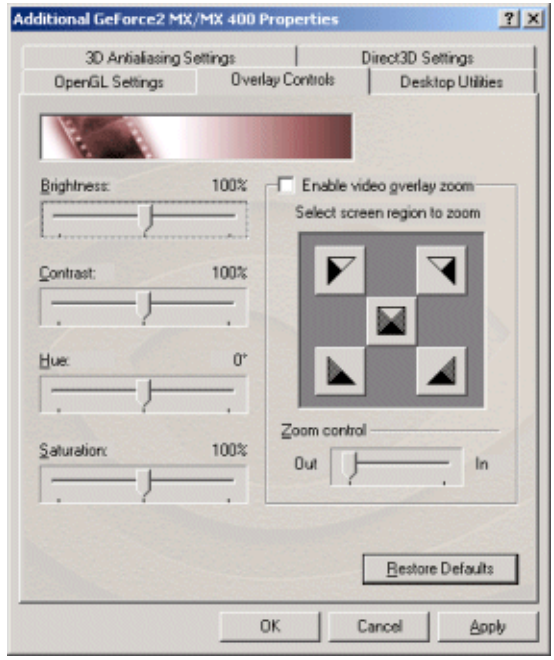


Figure 8.3 Overlay Controls Settings in Multi-Display Mode: Windows 2000/XP

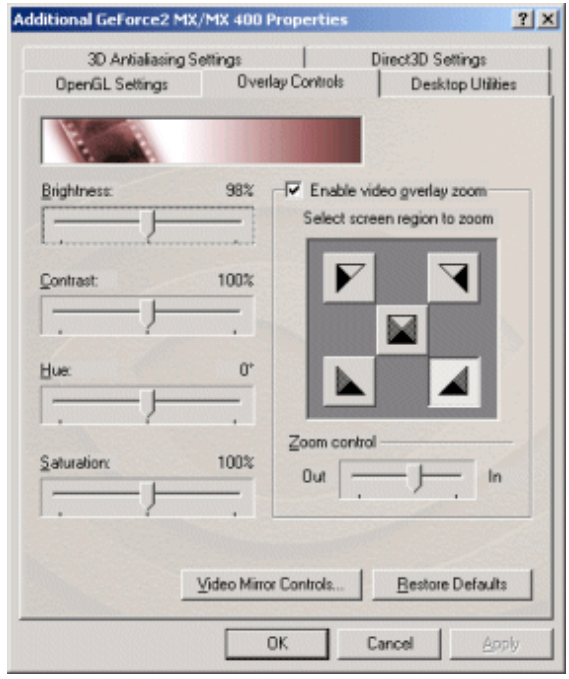
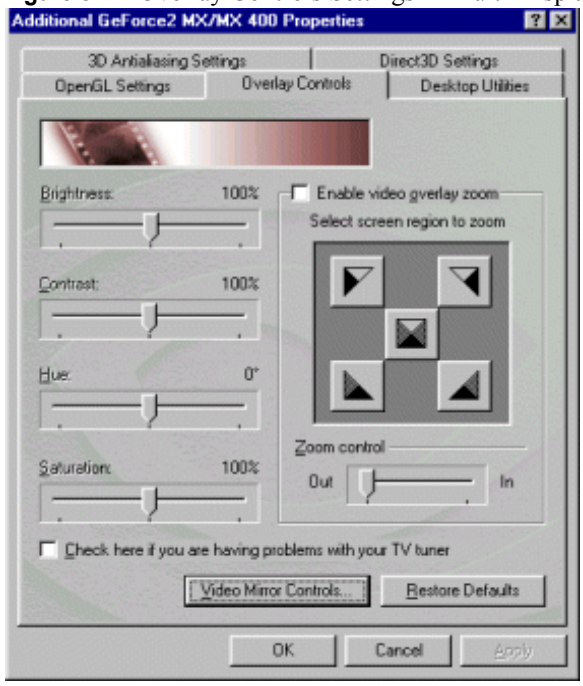


Figure 8.4 Overlay Controls Settings in Multi-Display Mode: Windows 98



Video Mirror Controls

Note: *Be sure to click* ***Apply*** *whenever you make any changes to the pages. If changes do not take effect (e.g., the controls have no effect on the video) after you click Apply, close the video overlay and then re-open it.*

nView Clone Mode

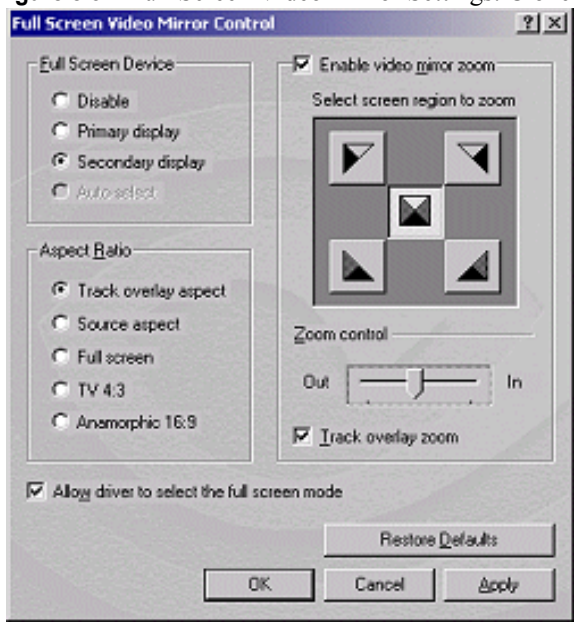
Follow these steps to access the Video Mirror settings if you are using nView Clone mode:

1. From the Overlay Controls page, click **Video Mirror Controls** to open the Full Screen Video Mirror page.

   The first time you enter this page, the Disable option is selected and the Auto-select option is disabled.

2. Click either **Primary display** or **Secondary display** to duplicate the video image on the full screen of your secondary device (such as a TV or DFP) or primary device (such as your CRT). The other options on this page become enabled as shown in Figure 8.5.

Figure 8.5 Full Screen Video Mirror Settings: Clone Mode (Windows 2000)



3 Make any other changes you want (see "Video Mirror Settings" on page 87) and click **Apply**.

Windows 9*x* Extended Desktop Mode

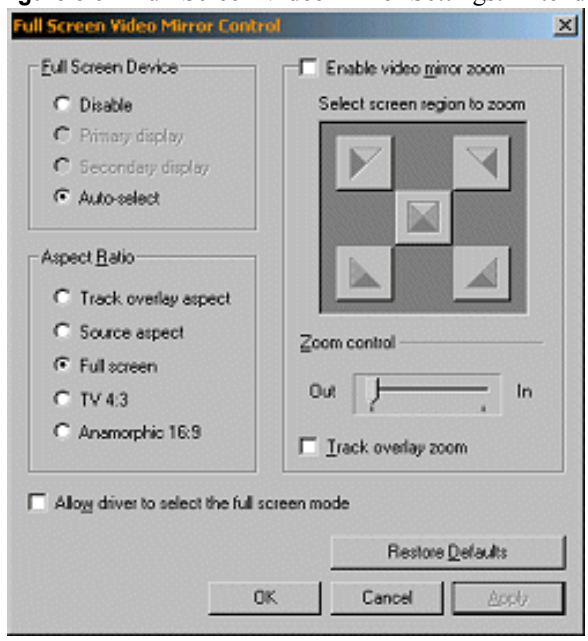
Follow these steps to access the Video Mirror settings if you have enabled the Windows 9*x Extended Desktop* option on the Windows Display Properties Settings page.

1 From the Overlay Controls page, click **Video Mirror Controls** to open the Full Screen Video Mirror page. The first time you open this page, the Disable option is selected; the Primary display and Secondary display options are disabled.

2 Click **Auto-select** to enable Full Screen Device functionality (Figure 8.6).The other options on this page become enabled.

3 Make any other changes you want (see "Video Mirror Settings" on page 87) and click **Apply**.

Figure 8.6 Full Screen Video Mirror Settings: Extended Desktop (Windows 98)



Video Mirror Settings

Table 8.1 describes the Video Mirror configuration settings. With the exception of Enable Video Overlay Zoom, which is available on the Overlay Controls page, these settings are available on the Full Screen Video Mirror pages.l

Table 8.1 Video Mirror Settings

Features	Description
Enable Video Overlay Zoom	Enables zooming to a quadrant of the video data on the overlay; this setting does not require a nView device. (*See also* description of **Track Overlay Zoom** later in this table.)
• Select screen region to zoom	Select the quadrant to zoom.
• Zoom control slider	Moves the slider to zoom in and out. Video players that are not able to detect the presence of Video Mirror may not update the zoom factor immediately while displaying a still frame.
Full Screen Device	
• Disable	Disables Video Mirror.
• Primary display • Secondary display	To enable Full Screen Device functionality in *Clone* mode, click either Primary display or Secondary display as the full-screen Video Mirror device.

Table 8.1 Video Mirror Settings (continued)

Features	Description
• Auto-select	This setting is not available under Windows 2000. Auto-select enables Full Screen Device functionality in Windows 9*x* Extended Desktop or Windows XP Dualview mode, which creates the full-screen mirror on the display device on which there is no overlay. This implies that if the video being played is dragged to the other display, the full-screen mirror image will automatically switch displays.
Note: *After selecting any of the above options, you may need to exit and restart your video application for the settings to take effect.*	
Enable video mirror zoom	Enables zooming to a quadrant of the video display on the full-screen image.
• Select screen region to zoom	Select the quadrant to zoom
• Zoom control slider	Move the slider to zoom in and out.
	Note: *Video players that cannot detect the presence of Video Mirror may not update the zoom factor immediately while displaying a still frame.*
Aspect Ratio	This category contains advanced settings used to change the aspect ratio of the video display on the Video Mirror.
• Track overlay aspect	Default and recommended setting. The aspect ratio of the Video Mirror tracks the aspect ratio of the overlay.
• Source aspect	The aspect ratio of the Video Mirror is the same as that of the source video, assuming square pixels.
• Full screen	The video is stretched to the boundaries of the Video Mirror device.
• TV 4:3	Forces the Video Mirror aspect ratio to 4:3 (width:height).
• Anamorphic 16:9	Forces the Video Mirror aspect ratio to 16:9 (width:height).
Allow driver to select the full-screen mode	This is an advanced setting enabled by *default*. When enabled, the Video Mirror driver selects the optimal display mode for the full-screen device. When disabled, the Video Mirror uses the desktop mode that is currently set on the display device.
Track overlay zoom	Activating this option links the Zoom control on the Overlay Controls page to simultaneously control the zoom factor on the full screen video display. When **Track overlay zoom** is enabled, using either the Overlay Zoom or the Video Mirror Zoom controls affect both the overlay and the full screen video display. To use Track overlay zoom, follow these steps on the Video Mirror Controls page: **1** Click **Track overlay zoom** to check it. **2** Click **Enable video mirror zoom** to check it. **3** Select a quadrant (screen region) to zoom. **4** Move the Zoom control slider to zoom. Both the video overlay and its full screen mirror image on a secondary device (such as TV or DFP) zoom simultaneously. **5** To achieve the same results from the Overlay Controls page, continue with these steps:

Table 8.1 Video Mirror Settings (continued)

Features	Description
	6 Click **OK** to return to the Overlay Controls page. 7 Click **Enable video overlay zoom** to check the option (if it's not already checked). 8 Move the Zoom control slider to zoom. Both the video overlay and its full screen mirror image on a secondary device (such as TV or DFP) zoom simultaneously
Apply	When changing the Full Screen Device settings, click **Apply** for the changes to take effect. In general, the changes automatically take effect for all other settings.

CHAPTER 9

ADDITIONAL FEATURES AND ENHANCEMENTS

This chapter explains how to configure the following Detonator XP Display Driver settings:

Desktop Utilities

Use the NVIDIA Desktop Utilities page to do the following:

- **Enable Dualview mode** for Windows 2000/NT 4.0.
- **Enable Desktop Manager** and access its control panel.
- **Enable the NVIDIA QuickTweak icon** (a Windows task bar utility), which lets you conveniently view and even modify various features and configurations that are available on the NVIDIA control panel. The following settings can be accessed and modified through the QuickTweak icon:
  - 3D Antialiasing Settings

- Custom OpenGL Setting
- Custom Direct3D Settings
- Custom Color Settings
- Desktop Manager Settings
- Windows Display Properties Settings

Enabling Desktop Manager from the Desktop Utilities Page

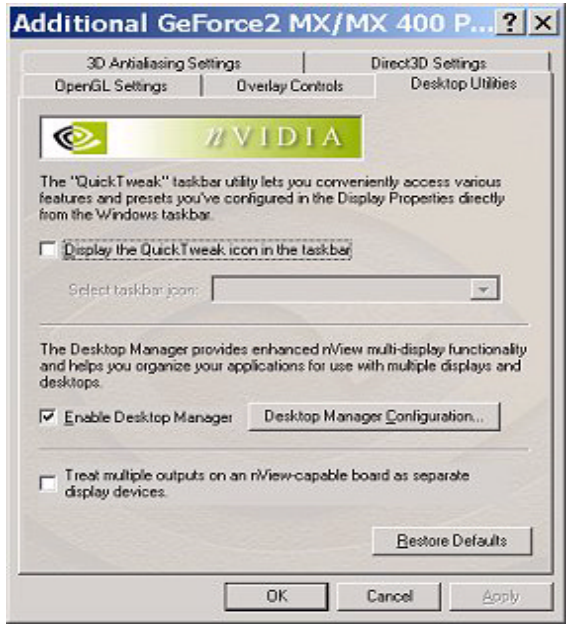
To enable (load) or disable (unload) Desktop Manager through the NVIDIA Desktop Utilities properties page, follow these steps:

1 Right click from your Windows desktop.

2 Then click **Properties** > **Settings** tab > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **Desktop Utilities** tab.

3 To enable the Desktop Manager, click the **Enable Desktop Manager** check box and click **Apply** (Figure 9.1).

Figure 9.1 Desktop Utilities Page: Enabling Desktop Manager



4 Now, when you right click from your Windows desktop, you will see that the properties menu contains the “nView Settings” option. For further details on

using the Desktop Manager, see the "*nView Desktop Manager User's Guide*".

5 To disable the Desktop Manager, simply click the **Enable Desktop Manager** check box to remove the check mark and **Apply**.

6 Right click from your Windows desktop and you will see that the "**nView Settings**" option no longer appears, indicating that the Desktop Manager has now been disabled.

Enabling the QuickTweak Icon from the Desktop Utilities Page

This is an alternate method of enabling the NVIDIA QuickTweak icon:

1 From your Windows desktop, right click to display the properties menu.

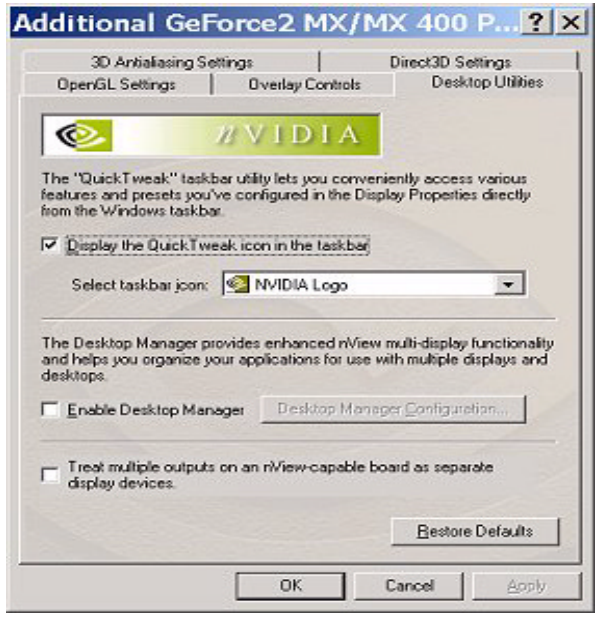
2 Then click **Properties** > **Settings** tab > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **Desktop Utilities** tab.

3 Next, click **Display the QuickTweak icon in the Windows taskbar** to enable this option

4 Click **Apply** (Figure 9.2). This adds the QuickTweak icon (Figure 9.3) to your Windows taskbar.

5 Go to the "Using the QuickTweak Icon" on page 94.

Figure 9.2 Desktop Utilities Page: Enabling QuickTweak Icon



Using the QuickTweak Icon

To use the QuickTweak icon on the Windows taskbar (Figure 9.3) simply right click the icon and then select the options you want from the menu that appears. The menus are shown in Figure 9.4, Figure 9.5, and Figure 9.6.

Figure 9.3 NVIDIA QuickTweak Icon

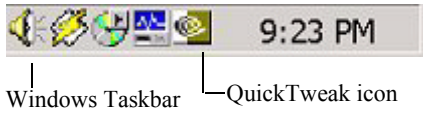


Figure 9.4 nView Options on the NVIDIA QuickTweak Menu

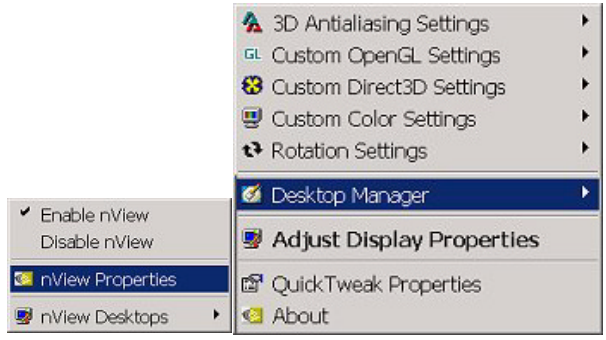


Figure 9.5 NVIDIA QuickTweak Menu: 3D Antialiasing Settings for Quadro2 MXR

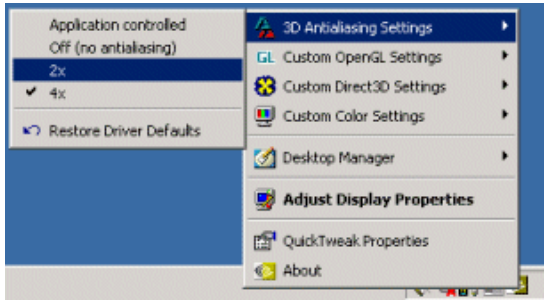
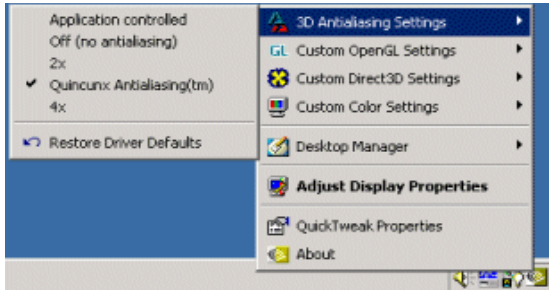


Figure 9.6 NVIDIA QuickTweak Menu: 3D Antialiasing Settings for GeForce3



Enabling Dualview Mode for Windows 2000

To enable Dualview mode in Windows 2000 (or Windows NT 4.0), follow these steps:

1. On the Desktop Utilities page, click the **"Treat multiple outputs on an nView-capable board. . ."** check box to insert a check mark in the box.

   Note: *This option does not apply and, therefore, is not available under Windows 9x and Windows XP.*

2. Click **Apply**.
3. Click **Restart your computer** when prompted.
4. After you log back on to your computer, from your desktop, right click to view the properties menu, then click **Properties** and the **Settings** tab. You'll notice that two monitor icons appear on the Settings page now.
5. For further details on Dualview configuration, see "Windows Dualview Mode" on page 27.

Color Correction

Follow one of these methods to access the Color Correction page:

- *From outside the nView page . . .*
  a. Right click from the Windows desktop to display the context menu and then click **Properties** > **Settings** > **Advanced**.
  b. Click the **Color Correction** tab to display the NVIDIA Color Correction page (Figure 9.7).
- *From the nView page. . :*
  a. Open the nView page.
  b. Right click on a monitor icon.
  c. Select **Color Correction** from the context menu.

Figure 9.7 Color Correction Page (non-nView access)

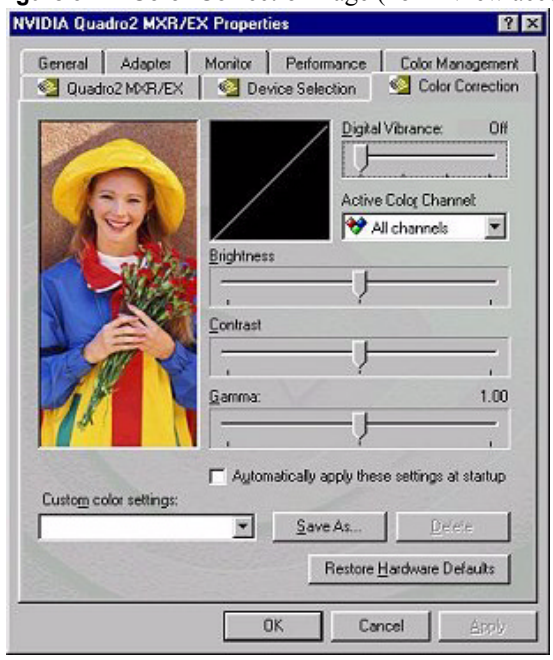
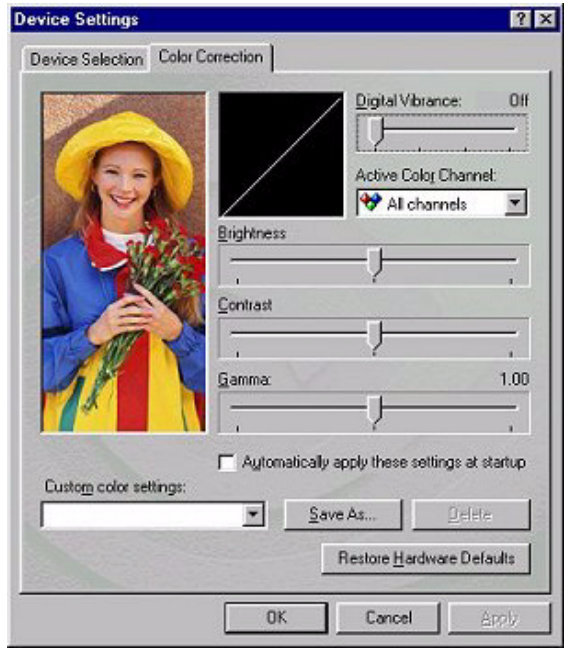


Figure 9.8 Color Correction Page (nView access)



Description of Color Correction Settings

Digital Vibrance

Digital Vibrance Control (DVC), a mechanism for controlling color separation and intensity, boosts the color saturation of an image. DVC is supported by the GeForce2 MX/Quadro2 MXR/EX family and later series of NVIDIA GPUs.

Digital Vibrance, a mechanism for controlling color separation and intensity, boosts the color saturation of images so that all images — including 2D, 3D, and video — appear brighter and crisper, even on flat panels.

Digital Vibrance can be turned off or set to different levels from low to high through the Color Correction page as shown in Figure 9.7 or Figure 9.8.

Active Color Channel

Allows you to select the color channel controlled by the sliders. You can adjust the red, green or blue channels individually or all three channels at once.

Brightness, Contrast, and Gamma Controls

The slider controls allow you to adjust the brightness, contrast, or gamma values for the selected color channel.

The Color Correction controls help you to compensate for variations in luminance between a source image and its output on a display device. This is useful when working with image processing applications to help provide more accurate color reproduction of images (such as photographs) when they are displayed on your monitor.

Also, many 3D-accelerated games may appear too dark to play. Increasing the brightness and/or gamma value equally across all channels will make these games appear brighter, making them more playable.

Diagonal Line/Curve

Diagonal Line/Curve shows a graphical representation of the color curve. This curve will change in real time as you adjust the contrast, brightness, or gamma.

Custom Color Settings

Provides a list of the custom color settings you have saved. Selecting an item from the list will activate the setting.

Other Settings

- **Automatically apply these settings at startup:** Enabling this option automatically applies the color adjustments you have made on the Color Correction page after you restart Windows.

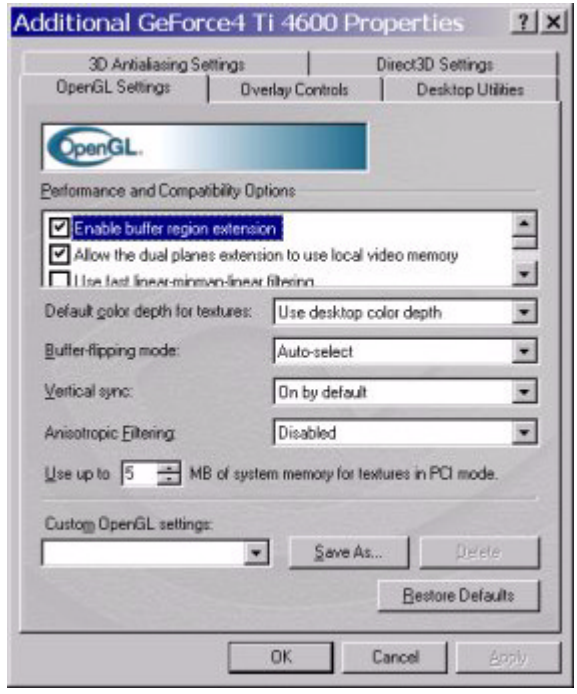
Note: *If your computer is running on a network, the color will be adjusted after you have logged on to Windows.*

- **Save as** lets you save the current color settings as a custom setting. Saved settings will then be added to the adjacent list.
- **Delete** lets you delete the custom color setting currently selected in the list.
- **Restore Hardware Defaults** restores all color values to the hardware factory settings.

OpenGL Settings

To access the Direct3D Setting page, right click from the Windows desktop to display the context menu and then click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **OpenGL Settings**.

Figure 9.9 OpenGL Settings



Description of OpenGL Settings

Note: *Availability of options described below depend on the NVIDIA GPU you are using.*

Performance and Compatibility Options

- **Allow the Dual Pane Extensions to Use Local Video Memory** allows the use of local video memory when the `GL_KTX_buffer_region` extension is enabled. However, if there are less than 8 MB of local video memory available, dual planes extension support will not be enabled.

  Note: *This setting has no effect if the "**Enable buffer region extension**" is disabled.*

- **Enable Anisotropic Filtering** allows OpenGL to use anisotropic filtering for improved image quality. Note that enabling this feature improves image quality at the cost of performance.

  Note: *Based on the NVIDIA GPU you are using, this option may be represented as a separate list box option called **Anisotropic Filtering** (enabled/disabled), as explained later.*

- **Enable Advanced Multiple Monitors**

  Note: *This option is only supported under Windows XP/2000/NT.*

  This option appears on systems installed with any two NVIDIA GPU-based graphics cards; i.e., TNT family and later versions. For example, one TNT2 and one Quadro2 MXR GPU-based card is an acceptable combination. However, RIVA 128/128ZX GPUs are excluded from this combination.

  When this option is enabled, an OpenGL application started on one display can continue rendering when moved to the other display or when spanning both displays.

  When this option is disabled, an OpenGL application only renders on the display on which it was started.

- **Enable Alternate Depth Buffering Technique** enables an alternate technique for depth buffering. This lets the hardware use a different mechanism for depth buffering in applications using a 16-bit depth buffer. Enabling this setting can produce higher quality rendering of 3D images.

- **Enable Buffer Region Extension** allows the drivers to use the OpenGL extension `GL_KTX_buffer_region`, which can increase application performance in 3D modeling applications that support this extension.

- **Disable Support for Enhanced CPU Instruction Sets** disables driver support for enhanced instructions used by certain CPUs. Some CPUs support

additional 3D instructions that complement your NVIDIA graphics processor and improve performance in 3D games or applications. This option allows you to disable support for these additional 3D instructions in the drivers. This can be useful for performance comparisons or for troubleshooting.

- **Force 16-bit Depth Buffer**

  Note: *This options is only supported under Windows XP/2000/NT.*

  This option forces the OpenGL driver to use a 16-bit depth buffer regardless of the pixel format chosen by the application. Enabling this option improves the performance of depth buffer clears and operations but at the expense of less precision in the depth buffer.

  Note: *This option is supported under the Quadro/Quadro2 GPU-based cards only if the "Use Unified Back/Depth Buffer" option is enabled. (See below for a description of this option.)*

- **Use Fast Linear-Mipmap-Linear Filtering** allows fast linear-mipmap-linear filtering, which increases application performance but at the expense of some image quality. In many cases, a loss of image quality may not be noticeable, so you may want to take advantage of the extra performance that is gained by enabling this feature.

Quadro GPU-based Options

Note: *The following options are available only on Quadro-based and later releases in the Quadro GPU family.*

Note: *These options are only supported under Windows XP/2000/NT.*

Note: *If Quadbuffered Stereo or OpenGL Overlays do not work properly, you may want to try setting different screen resolutions and refresh rates until you arrive at a setting or combination of settings for better results.*

- **Use Unified Back Buffer** is an option that can improve the performance of OpenGL applications that use multiple windows. When this option is enabled, the OpenGL driver allocates one back buffer and one depth buffer at the same resolution of the display. This method makes more efficient use of video memory for applications that create multiple windows. When disabled, the OpenGL driver allocates a back buffer and depth buffer for every window created by an application.

Note: *This option must be enabled to activate such features as OpenGL Overlay planes and Quadbuffered Stereo API; explanations of these options follow.*

- **Enable Quadbuffered Stereo API** is an option that allows the driver to export stereo pixel formats so that OpenGL applications can support stereo viewing and stereo shutter glasses.

  Notes: *OpenGL stereo and overlays cannot be enabled simultaneously.*

  On activating this option, notice that the ***Additional OpenGL Properties*** *option is enabled. Click this option to access the OpenGL Stereo configuration page (*Figure 9.10*).*

  For details, see "OpenGL Stereo Settings: If you checked the Enable Quadbuffered Stereo API option on the OpenGL Settings page, click Additional OpenGL Properties to open the OpenGL Stereo page (Figure 9.10)." on page 101.

- **Enable Overlays** allows the driver to export overlay pixel formats. Some applications (for example, Softimage3D) require overlay planes, which are used as a paletted surface in addition to the normal color (RGB) buffer. Overlays are especially useful for overlapping drawing areas that are independent of the 3D image itself, such as menus and cursors. Overlays are supported in 16-bit and 32-bit color modes.

  Note: OpenGL stereo and overlays cannot be enabled simultaneously.

  Tip: *Overlays need additional onboard graphics memory and may not be available under all resolutions. You may want to reduce the resolution or color depth if you have problems accessing overlay functionality.*

- **OpenGL Stereo Settings:** If you checked the **Enable Quadbuffered Stereo API** option on the OpenGL Settings page**,** click **Additional OpenGL Properties** to open the OpenGL Stereo page (Figure 9.10).

Figure 9.10 OpenGL Stereo Settings

Tip: *If Quadbuffered Stereo or OpenGL Overlays do not work properly, you may want to try setting different screen resolutions and refresh rates until you arrive at a setting or combination of settings for better results.*

- **Enable Overlay in OpenGL**. *See* the explanation under "Enable Overlays" in the previous section.
- **Enable Stereo in OpenGL** enables stereo in OpenGL. To run stereo applications with shutter glasses or other hardware, the NVIDIA driver exports OpenGL stereo pixel formats and organizes memory to allow stereoscopic and monoscopic applications to be used simultaneously.

  Note: *OpenGL stereo and overlays cannot be enabled simultaneously.*

  Tips: *Enable this option only if it is necessary. Some applications automatically choose a stereo format while other applications may not function properly in a stereo pixel format.*

  Stereo viewing requires additional onboard graphics memory and may not be available under all resolutions. You may want to reduce the resolution or color depth if you have problems viewing in stereo.

- **Stereo Display Modes:** The NVIDIA driver supports a variety of stereo hardware. If you use stereo hardware other than the default, select a display mode from the list box.

- **Use shutter glasses:** Select this option only if you use an ELSA 3D REVELATOR or compatible adapter. These adapters will translate the monitor signal to the standardized 3-pin-DIN used by most of available stereo hardware.

  You don't need to use the adapter if your graphics card has a built-in 3-pin-DIN connector!

  Tip: *If you are encountering problems with stereo viewing with shutter glasses, you may want to experiment with different refresh rate settings for your monitor. For example, your shutter glasses will not work on a flat panel set to a very low refresh rate.*

- **Use Vertical Interlace Monitor:** Select this option if you have connected an auto-stereo flat panel to your graphics card.

  Note: Non-stereo flat panels are not recommended for stereo viewing.

- **Use nView Clone mode:** Select this option if you have passive stereo hardware. This option is *only* available on NVIDIA GPU-based multi-display cards. To use this option, you need to have connected the projectors to the multi-display card and enabled nView Clone mode from the nView page. One head will show the left eye of the image and the second head will show the right eye.

- **Use Onboard DIN Connector:** If your graphics card has a built-in 3-pin DIN connector, select this option to enable the feature. In this case, you do not need extra adapters such as those shipped with the ELSA 3D REVELATOR or StereoGraphics glasses. You can connect any stereo hardware using the 3-pin-DIN connector directly to the graphics card.

- **Use Blue-Line-Code for StereoGraphics Products:** Select this option if you use an adapter shipped with StereoGraphics StereoEyes or compatible products. These adapters translate the monitor signal to the standardized 3-pin DIN connector used by most of available stereo hardware.

  You don't need to use the adapter if your graphics card has a built-in 3-pin DIN connector.

- **Swap eyes (L becomes R, R becomes L):** In case you cannot view a stereo effect, select this option to exchange the left and right images. In general, you may need to enable this option only on vertical interlace monitors and in passive mode.

Default Color Depth for Textures

This option determines whether textures of a specific color depth should be used by default in OpenGL applications.

- **Use Desktop Color Depth** means that the textures of the color depth at which your Windows desktop is currently running will be used.
- **Always Use 16 bpp** and **Always Use 32 bpp** options force the use of textures of the specified color depth, regardless of your desktop settings.

Buffer Flipping Mode

This option determines the buffer-flipping method for full-screen OpenGL applications. You can select one of the following methods:

- **Use Block Transfer** is the block transfer method.
- **Auto-select** allows the driver to determine the best method based on your hardware configuration.

Note: *If you are using an older NVIDIA driver, the "Use page flip" method may also appear in the above list. In newer drivers, this method is auto-selected, if necessary, based on the application.*

Vertical Sync

This option lets you specify how vertical synchronization (sync) is handled in OpenGL.

- **Always Off** disables Vertical Sync in all OpenGL applications.
- **Off by Default** keeps Vertical Sync disabled, unless an application specifically requests it to be enabled.
- **On by Default** keeps Vertical Sync enabled, unless an application specifically requests it to be disabled.

Anisotropic Filtering

Note: *Depending on the NVIDIA GPU you are using, this option may be represented as a check box in the first part of the OpenGL Settings page (as explained earlier) instead of a separate list box.*

This option allows OpenGL to use anisotropic filtering for improved quality of images.

- **Disabled** disables Anisotropic filtering.
- **Enabled** allows OpenGL to use anisotropic filtering for improved image quality. Note that enabling this feature improves image quality at the cost of performance.

PCI Texture Memory Size

The "**Use up to _ MB of System Memory for Textures in PCI mode"** value allows the GPU to utilize up to the specified amount of system memory for

texture storage (in addition to the memory installed on the display adapter itself). This setting applies only to PCI display adapters (or AGP display adapters running in PCI compatibility mode).

Tip: *The maximum amount of system memory that can be reserved for texture storage is calculated based on the amount of physical RAM installed in your computer. The more system RAM, the higher the value you will be able to set.*

Custom OpenGL Application Settings

Note: *This option applies only to Windows XP/2000/NT 4.0.*

This option displays a list of preconfigured settings that correspond to OpenGL workstation applications. Settings include AutoCAD, CATIA, 3D Paint, 3D Studio Max. Pro/ENGINEER, Lightwave, CDRS, Solidworks, Unigraphics, and others.

Custom OpenGL Settings

Note: *This option applies only to Windows 9x.*

This option displays a list of the custom settings you have saved. Selecting an item from the list activates the setting. To apply the setting, click **OK** or **Apply**.

Other Settings

Note: *These options apply only to Windows 9x.*

- **Save As . .** lets you save the current settings as a custom "tweak". Saved settings are then be added to the adjacent list. Once you have found the optimal settings for a particular OpenGL application, saving the settings as a custom tweak allows you to quickly configure OpenGL before starting the program and eliminates the need to set each option individually.
- **Delete** lets you delete the custom setting currently selected in the Custom OpenGL settings field.
- **Restore Defaults** restores all settings to their default values.

Direct3D Settings

To access the Direct3D Setting page, right click from the Windows desktop to display the context menu and then click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **Direct3D Settings**.The Direct3D Settings page is shown in Figure 9.11.

Figure 9.11 Direct3D Settings

Description of Direct3D Settings

Note: *Availability of options described below depend on the NVIDIA GPU you are using.*

Performance and Compatibility Options

- **Adjust Z-buffer Depth to Rendering Depth if Unequal** forces the hardware to automatically adjust the depth of its Z-buffer to the depth that the application requests. Normally, you will want to keep this option enabled, unless your application absolutely requires a specific Z-buffer depth. If this option is disabled, any application with a working Z-buffer depth that does not match that of the current hardware configuration will not run.
- **Display Logo When Running Direct3D Applications** enables the NVIDIA logo in Direct3D. Enabling this setting will display the NVIDIA logo in the lower corner of the screen while running Direct3D applications.
- **Enable Alternate Depth Buffering Technique** enables an alternate technique for depth buffering, which lets the hardware use a different mechanism for depth buffering in 16-bit applications. Enabling this setting can produce higher quality rendering of 3D images.
- **Enable Fog Table Emulation** is used to turn fog table emulation *on* or *off*. Direct3D specifies that a display adapter capable of D3D hardware

acceleration should be able to implement either vertex fog or table fog. Some games do not correctly query the Direct3D hardware capabilities and expect table fog support. Enabling this option ensures that these games will run properly with your NVIDIA graphics processor.

Mipmap Detail Level

Allows you to adjust the **LOD (Level of Detail)** bias for mipmaps. A lower bias will provide better image quality, while a higher bias will increase application performance. You can choose from five preset bias values:

- Best image quality
- High image quality
- Blend
- High performance
- Best performance

PCI Texture Memory Size

This option allows the graphics processor to utilize up to the specified amount of system memory for texture storage (in addition to the memory installed on the display adapter itself).

To specify the amount of system memory you want for textures in PCI mode, click the up or down arrow

Note: *This setting applies only to PCI display adapters or AGP display adapters running in PCI compatibility mode.*

Tip: The maximum amount of system memory that can be reserved for texture storage is calculated based on the amount of physical RAM installed in your computer. The more system RAM available on your computer, the higher the value you can set.

Custom Direct3D Settings

Click the arrow button to display a list of the custom settings (or "tweaks") you have saved. Selecting an item from the list activates the setting. To apply the setting, click **OK** or **Apply**.

Other Settings

- **Save As . .** lets you save the current settings and those set in the More Direct3D page as a custom "tweak". Saved settings will then be added to the adjacent list. Once you have found the optimal settings for a particular Direct3D game, saving the settings as a custom tweak allows you to quickly

configure Direct3D before starting the game and eliminates the need to set each of the options individually.

- **Delete** lets you delete the custom setting currently selected in the Custom Direct3D Settings field.
- **Restore Defaults** restores any settings you have changed to their default values.

Description of More Direct3D Settings

Click **More Direct3D** from the Direct3D page (Figure 9.11) to display the More Direct3D page (Figure 9.12).

Texel Alignment changes the hardware texture-addressing scheme for texels (texture elements). Changing these values will change where texel origin is defined. The default values conform to the Direct3D specifications. Some software may expect the texel origin to be defined elsewhere. The image quality of such applications will improve if the texel origin is redefined.

Use the slider control to adjust the texel origin between the upper left corner and the center of the texel.

Figure 9.12 MoreDirect3D Settings

3D Antialiasing Settings

Note: *The 3D Antialiasing settings are supported by the GeForce2 MX/ Quadro2 MXR/EX family and later series of NVIDIA GPUs.*

To access the Direct3D Setting page, right click from the Windows desktop to display the context menu and then click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **3D Antialiasing Settings**. The 3D Antialiasing Settings page is shown in figure Figure 9.13 and Figure 9.14.

Description of 3D Antialiasing Settings

Note: *Availability of options described below may depend on the NVIDIA GPU you are using.*

These options allow you to select the degree of antialiasing to be used in Direct3D and OpenGL applications.

Allowing Applications to Control the Antialiasing Mode

Allow applications to control the antialiasing mode automatically enables the optimal antialiasing settings to be used by the 3D (OpenGL or Direct3D) applications that support antialiasing. Antialiasing is a technique used to smooth the edges of objects in a scene to reduce the jagged "stair-step" effect that sometimes appears.

Figure 9.13 3D Antialiasing Settings

Manually Selecting the Antialiasing Mode

Manually select the antialiasing mode allows you to manually select the antialiasing mode to be used when running your 3D applications.

- **Off (no antialiasing)** disables antialiasing in 3D applications. Select this option if your require *maximum performance* in your applications.
- **2x** enables antialiasing in 3D applications using the 2x mode. This option offers improved image quality and high performance in 3D applications.
- **Quincunx Antialiasing** *(available only on Quadro DCC)* as shown in Figure 9.14 offers better quality than the 2x option and better performance than the 4x option.
- **4x** enables antialiasing in 3D applications using the 4x mode. This option offers the highest possible image quality at the expense of some performance in 3D applications
- **4xS (Direct3D only)** enables antialiasing using the 4xS mode. It offers a higher quality image than 4x mode but at a slightly lower performance in 3D applications. *This option is available on GeForce3 and later GPUs*, as shown in Figure 9.15.

Note: This setting only affects Direct3D applications. When running OpenGL applications, OpenGL will use the next capable antialiasing setting; i.e., the setting found immediately preceding the 4xS setting.

Figure 9.14 3D Antialiasing Settings (Example: Quadro DCC)

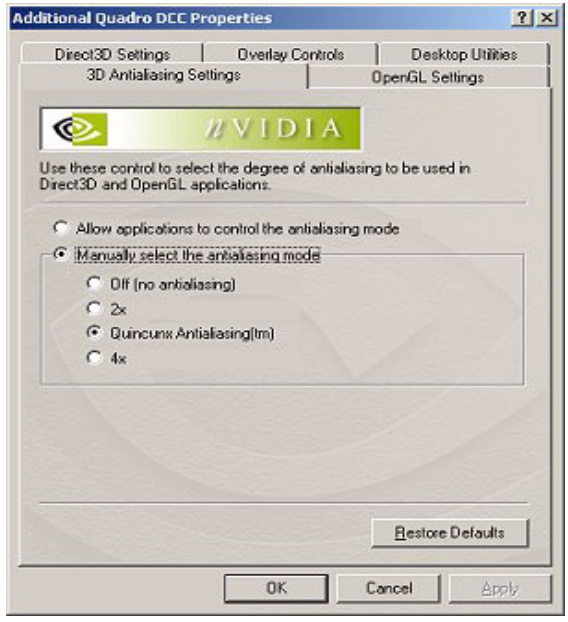
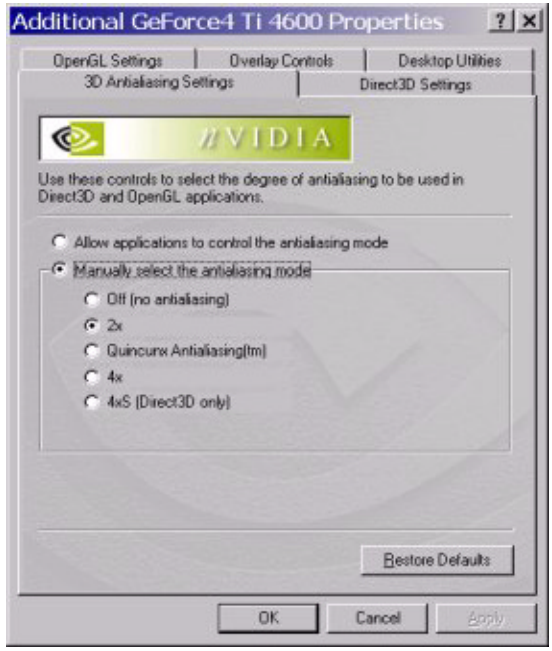


Figure 9.15 3D Antialiasing Settings (Example: GeForce Ti 4600)



Tips on Settings Antialiasing Modes

Some antialiasing settings require a large amount of video memory. If the mode you requested requires more video memory than available and you see unexpected results, try selecting the next lower mode, and so on, until you achieve the desired result.

You may also want to experiment with different screen resolutions, refresh rates, and/or color depths until you arrive at a setting or combination of settings for antialiasing to work.

Overlay Controls

Use the Overlay Controls page to adjust the quality of video or DVD playback on your monitor.

Note: *If any settings changes you make do not take effect (e.g., the controls have no effect on the video) after you click* ***Apply****, close the video overlay and then re-open it.*

1. Open the DVD or video application that you want to view.
2. Right click to display the context menu and then click **Properties** > **Settings > Advanced**.

3 Click the **NVIDIA GPU** tab > **Additional Properties > Overlay Controls** tab.

Figure 9.16 and Figure 9.17 show Overlay Controls pages for Windows XP/2000/NT 4.0 and Windows 98.

To use the Video Mirror controls, see "Video Mirror Controls" on page 108.

Description of Overlay Settings

- **Brightness, Contrast, Hue, and Saturation**: You can independently control the brightness, contrast, hue, and saturation to achieve optimal image quality when playing back videos or DVD movies on your computer.
- **Enable video overlay zoom** enables zooming to a quadrant of the video display.
  - a Click this option and then **Apply** to use the Zoom control to zoom in (out) on a specific area of the video display (overlay) on your screen.
  - a Using the diagram of the **screen regions**, you can select the area of the video screen you would like to zoom. Once selected, to zoom to that portion of the screen, move the Zoom control slider between the Out and In range.

Note: *Video players that cannot detect the presence of Video Mirror may not update the zoom factor immediately while displaying a still frame.*

- **Check here if you are having problems with your TV tuner:** (Windows 9*x only*) Enabling this option, as shown in Figure 9.17, forces the overlay software to use busmastering.

  Note: *It is recommended that you leave this option unchecked unless you experience problems with video playback, such as image corruption or you cannot see a video image.*

Figure 9.16 Overlay Controls: Windows XP/2000

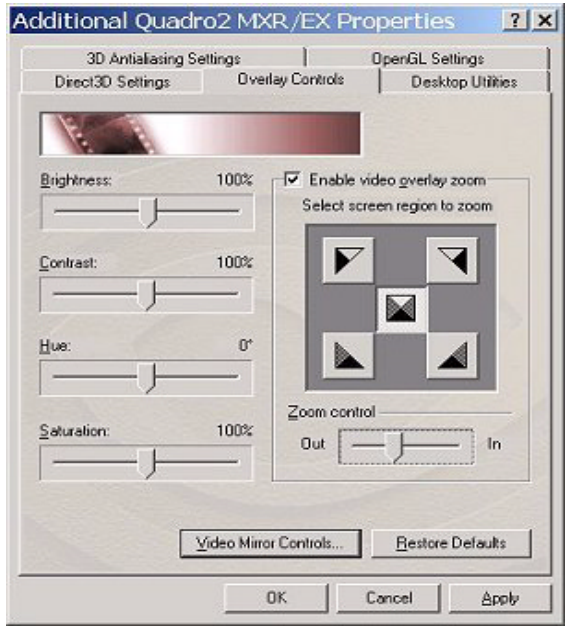
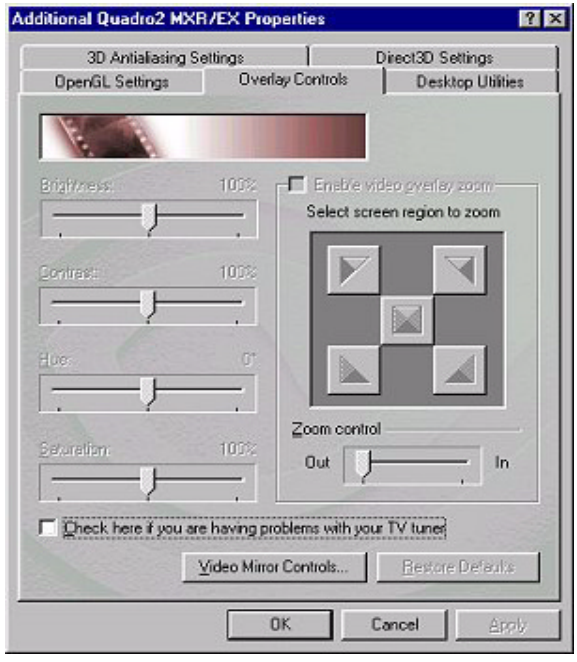


Figure 9.17 Overlay Controls: Windows 98



PowerMizer Settings (Laptops *only*)

When using a laptop computer, the NVIDIA PowerMizer page allows you to regulate the power consumption of your GPU. You can conserve battery life by setting Maximum Power Savings or take advantage of the full graphics performance of your GPU by selecting Maximum Performance.

To access the PowerMizer page on your laptop, from your Windows desktop:

1. Right click to display the context menu and then click **Properties** > **Settings** > **Advanced**.
2. Click the **Quadro/Quadro2** GPU tab, **Additional Properties** and then the **PowerMizer** tab.

   A PowerMizer page is shown in Figure 9.18 with the following settings.

   - **Maximum Power Savings:** Applications running under maximum power savings will decrease performance.
   - **Maximum Performance**: Applications running under Maximum Performance will increase power consumptions by your GPU. This setting infers that there is zero power savings and the GPU is consuming maximum power.
3. The middle setting is recommended for a balance between Maximum Power Saving & Maximum Performance.

Figure 9.18 PowerMizer Settings: Quadro2 Go (for laptops)

APPENDIX

A

NVIDIA DUAL-CARD CONFIGURATION

This appendix contains the following major topics:

Before You Begin

This chapter contains an example using two NVIDIA GPU-based graphics cards, the GeForce3 AGP card and the GeForce2 MX PCI card, in one computer running **Windows 2000**.

Note: *Windows 2000 control panel pages also apply to* ***Windows NT 4.0 and XP****; exceptions are noted where applicable.*

In this example:

- the GeForce3 GPU-based card is connected to a DFP (digital flat panel) display *and*
- the GeForce2 MX GPU-based card is connected to a TV and CRT (analog monitor) for multi-display functionality.

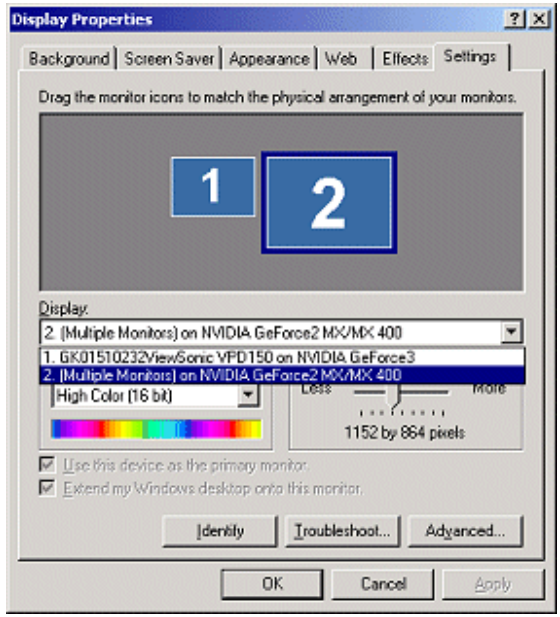
Setting Up the Dual NVIDIA Cards

Follow these steps to use two NVIDIA GPU-based graphics cards on your computer:

1. Make sure you have an AGP slot and a PCI slot on your computer.
2. Install the appropriate PCI and AGP cards.
3. Install the most recent NVIDIA Release 25 Detonator XP driver software.
4. Restart your computer as necessary and as prompted so that your system detects both graphics cards.
5. Once your Windows has restarted for the final time and your desktop is no longer processing start-up tasks, right click on the desktop to display the context menu.
6. Click **Properties** and the **Settings** tab to display the Windows **Settings** page.
7. Click the down arrow in the Display windows, as shown in Figure A.1**.**

   This example shows that the GeForce3 GPU-based card is connected to a DFP and the GeForce2 MX GPU-based card is connected to “multiple displays”, which is true: the GeForce2 MX card is connected to both a TV and a CRT.

Figure A.1 Settings Page for Dual Cards: Windows 2000



8. Go to the next section “Enabling the First Card: GeForce3” on page 117

Enabling the First Card: GeForce3

1. Make sure you've completed the instructions in the previous section "Setting Up the Dual NVIDIA Cards" on page 116.
2. Click on Display **1 DFP on NVIDIA GeForce3** so that it displays in the Display window.
3. Then, right click on monitor icon 1 to display a context menu and select **Attached** to check the option. Notice the "Extend my windows desktop onto this monitor" check box becomes checked (Figure A.1).
4. Now click the empty check box **"Use this device as the Primary monitor"** (Figure A.2) to check it. Both check boxes are now grayed (Figure A.3). This indicates that your Display 1 device, which is the DFP in this example, is connected to the NVIDIA GeForce3 GPU-based card.
5. Click **Advanced** to display the page shown in Figure A.4.
6. Click the **GeForce3** tab to display the GeForce3 page (Figure A.5).

Figure A.2 Dual-Card Settings: GeForce3 on Windows 2000 (1)

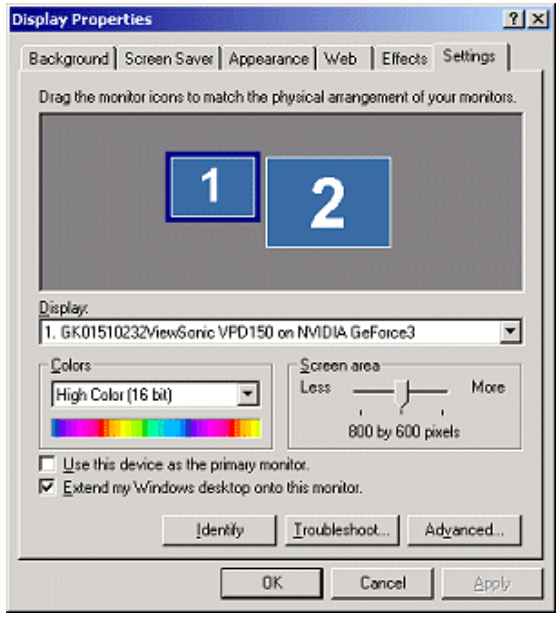


Figure A.3 Dual-Cards Settings: GeForce3 on Windows 2000 (2)

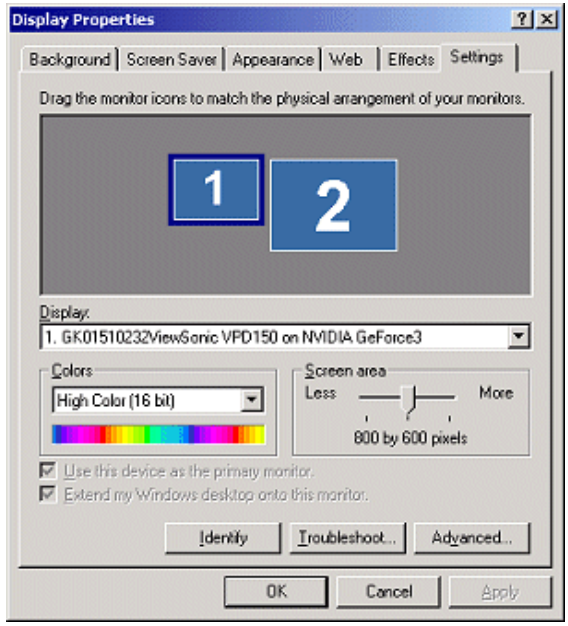


Figure A.4 NVIDIA Control Panel Tabs (non-nView Mode)

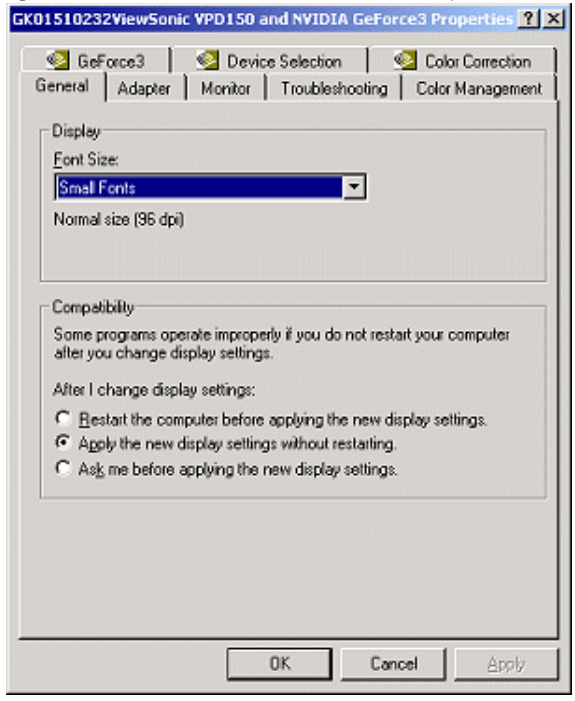
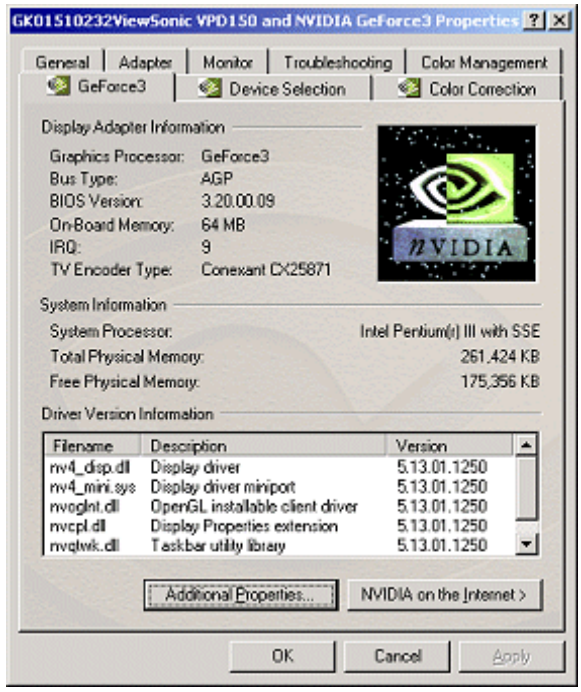


Figure A.5 NVIDIA GeForce3 Page



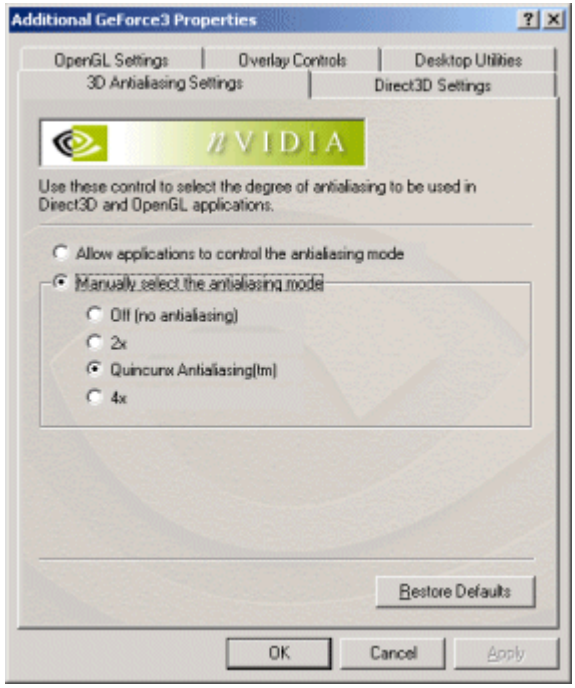
7 Click the **Additional Properties** to display the 3D Antialiasing Settings page (Figure A.6). From here you can now access all the features & options for the GeForce3 card, as explained in the following chapters:

- "The GeForce3 Family of GPUs" on page 19
- "Device Selection And Configuration" on page 61

Note: "Additional Features and Enhancements" on page 91*To easily view the dual-cards and its other features and options through the NVIDIA Quick Tweak icon, see* "Accessing Dual Cards & Configurations With QuickTweak" on page 123.

8 Go to the next section "Enabling the Second Card: GeForce2 MX" on page 120.

Figure A.6 GeForce3 3D Antialiasing Settings: Windows 2000



Enabling the Second Card: GeForce2 MX

1. Make sure you've completed the instructions in the previous section "Enabling the First Card: GeForce3" on page 117.
2. Return to the Windows Settings page.
3. Click the down arrow in the Display windows, as shown in Figure A.7.
4. Click on Display **2 (Multiple Monitor) on NVIDIA GeForce2 MX/MX 400** so that this choice appears in the Display window.
5. Then, right click on monitor icon **2** to display a context menu and click **Attached** to check the option. Notice the "**Extend my windows desktop onto this monitor**" check box becomes checked (Figure A.8).
6. Now click the empty check box **"Use this device as the Primary monitor"** to check it. Both check boxes are now grayed (Figure A.9), which indicates that your Display **2** device(s) (the multi-monitor setup of CRT and TV) are connected.
7. Click **Advanced** and click the **NVIDIA GPU** tab to display the NVIDIA GPU page (Figure A.10).

Figure A.7 Settings Page for Dual-Cards: Windows 2000

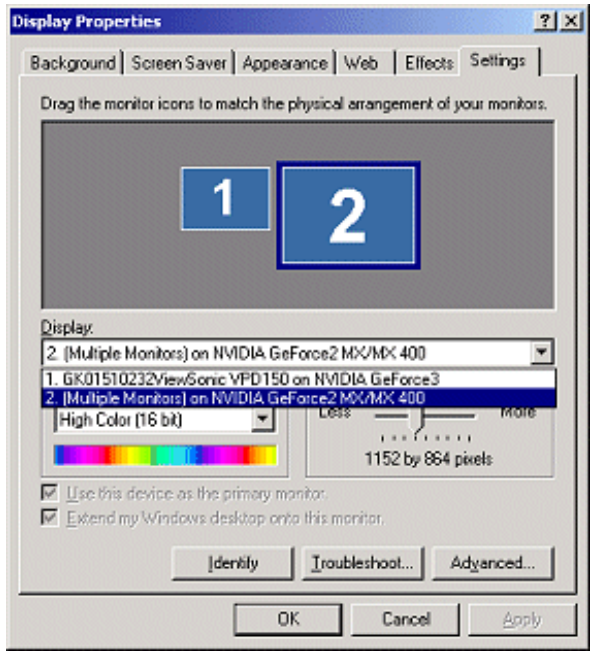


Figure A.8 Settings for Dual-Cards: GeForce2 MX on Windows 2000 (1)

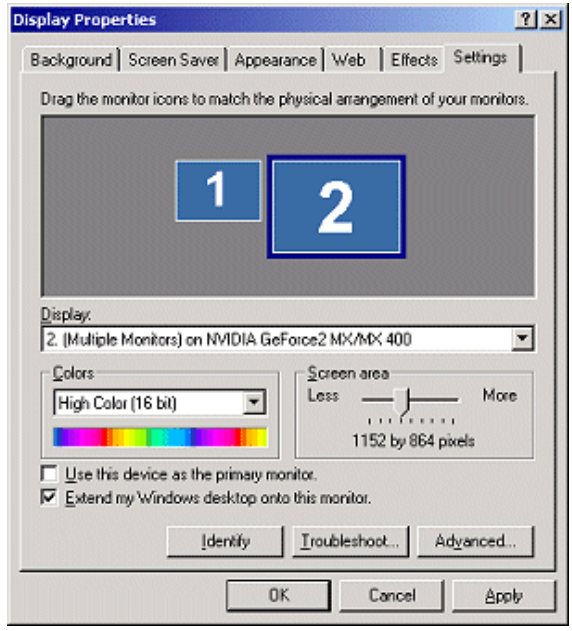


Figure A.9 Settings for Dual-Cards GeForce2 MX on Windows 2000 (2)

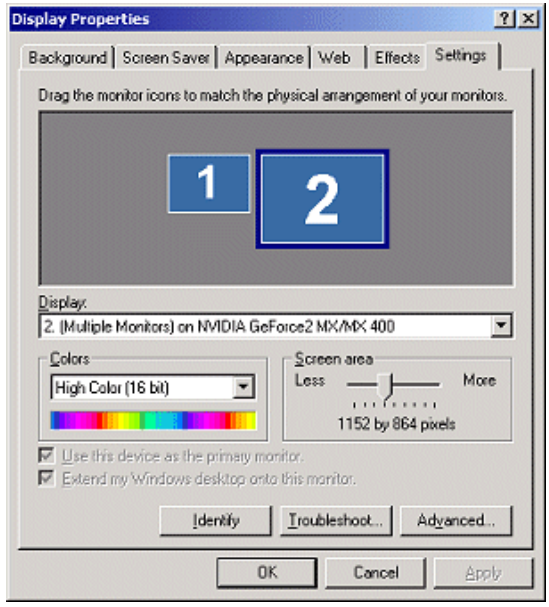
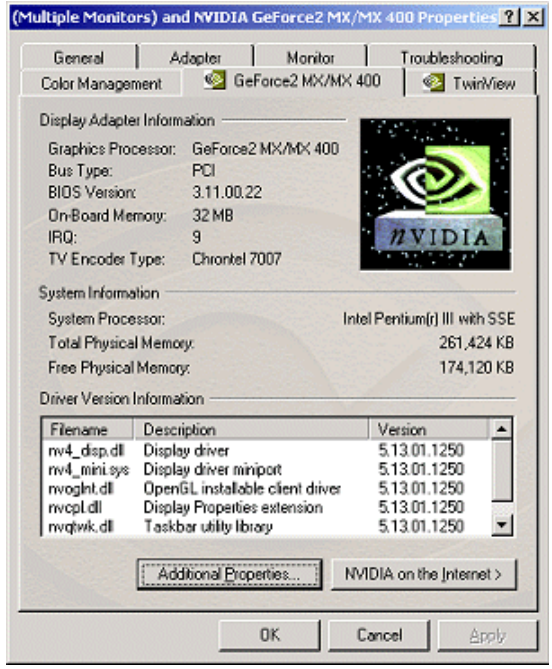


Figure A.10 NVIDIA GeForce2 MX Page

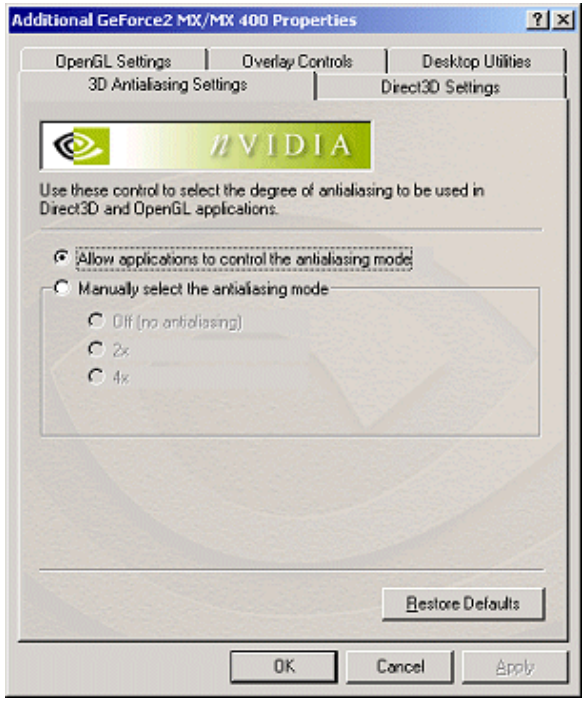


8 Click the **Additional Properties** to display the 3D Antialiasing Settings page (Figure A.11).

From this point onward, you can access all the features and options for the GeForce2 MX card, as explained in various chapters in this documentation.

9 To easily view the dual-cards and its other features and options through the NVIDIA Quick Tweak icon, see "Accessing Dual Cards & Configurations With QuickTweak" on page 123

Figure A.11 NVIDIA GeForce2 MX/MX 400 3D Antialiasing Settings



Accessing Dual Cards & Configurations With QuickTweak

You can view the dual-cards and its other features and options through the NVIDIA Quick Tweak icon.

If you don't have the NVIDIA QuickTweak icon enabled, see "Desktop Utilities" on page 91.

1 Right click the NVIDIA icon on your Windows task bar. A menu of configuration options appears, as shown in Figure A.12.

Notice that both the GeForce3 and GeForce2 MX GPU-based cards are displayed, as is Desktop Manager, since it was checked in the Desktop Utilities page earlier.

1 To see the GeForce3 or GeForce2 MX configuration options, point to **GeForce3** (Figure A.12**)** or **GeForce2 MX/MX 400** (Figure A.14) and then move the cursor to any of the options that appear on the next menu level**.** To see the next level of options, point to that option (that contains the arrow) and the next level of options appear.

Figure A.12 NVIDIA QuickTweak Icon Menu: Dual-Cards on Windows 2000

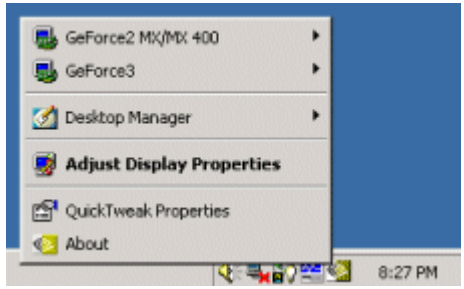


Figure A.13 NVIDIA QuickTweak Icon Menu: GeForce3 on Windows 2000

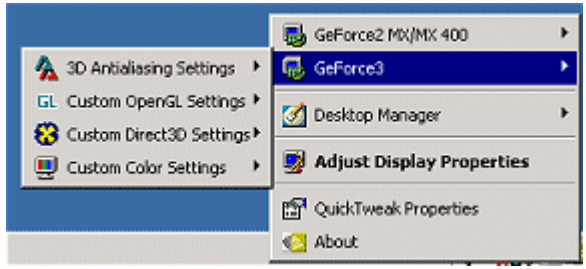


Figure A.14 NVIDIA QuickTweak Icon Menu: GeForce2 MX on Windows 2000