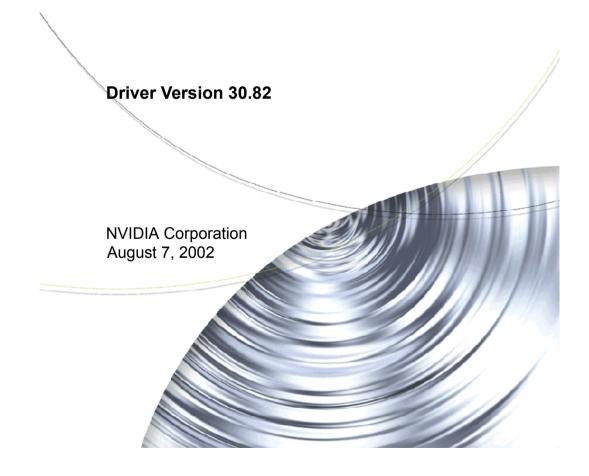


Drivers for Windows NVIDIA Display Properties User's Guide



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CHAPTER

INTRODUCTION

This chapter contains the following sections:

- "About this Guide" on page 1
- "nView vs. NVIDIA Display Properties" on page 2
- "Key Terms and Concepts" on page 3
- "System Requirements and Support" on page 5
- "Notes on Feature and Configuration Support" on page 8
- "About the NVIDIA Feature-Specific Tabs" on page 9

Note: The document titled *NVIDIA Drivers: Release Notes* enables add-incard (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 the NVIDIA Windows Control Panel-based user interface (tabs) accessible from the Windows Display Properties **Settings** > **Advanced** option.

The NVIDIA-based tabs can be used to configure the advanced display properties of the current release of the NVIDIA Windows Display Driver software, also known as the NVIDIA "Detonator XP" Display Driver.

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

nView vs. 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: nView Desktop Manager is now a separate item on the Windows Control Panel group. You can click this item to access the Desktop Manager configuration tabs and windows. 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*, refers to the NVIDIA Windows Control Panel-based user interface (tabs), which you can access from the **Windows Display Properties** > **Settings** > **Advanced** option. Using these tabs, you can configure the advanced display properties of the current release of the NVIDIA Windows Display Driver software.

Note: The NVIDIA Display Properties also includes the nView tab, 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".

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.

control panel

Refers to the Windows Control Panel group, which you can access by clicking **Start > Settings > Control Group** from the Windows desktop.

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.

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 button 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 the folder to contain the document to be saved and the name of that document when saving it.

Also see the definition of "modal dialog box" and "modeless dialog box" on this page.

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.

GPU

Graphics Processing Unit (GPU). NVIDIA graphics chip products are called GPUs. Supported NVIDIA GPUs are listed in "Hardware: Supported NVIDIA Products" on page 7.

modal dialog box

A dialog box that puts you in the state or "mode" of being able to work only in the dialog box. You cannot move a modal dialog box; it can be removed only by clicking its buttons.

modeless dialog box

A dialog box that resembles a document window without a collapse box. You can move a modeless dialog box, make it inactive and active again, and close it like a document window.

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.

single-display configuration

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

tab

The window associated with individual 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.

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.

System Requirements and Support

This section contains the following topics:

- "Operating Systems" on page 5
- "Disk Space" on page 5
- "Software: NVIDIA Display Driver" on page 6
- "Hardware: Supported NVIDIA Products" on page 7
- "Supported Languages" on page 8

Operating Systems

This release of the NVIDIA Display Properties driver is designed for the Microsoft operating systems listed in Table 1.1:

 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 95, 98, and Me are collectively called Windows 9x in this guide.

Disk Space

The release of NVIDIA Display Properties has the following disk space requirements, based on the operating system you are using:

- Windows XP/2000: 8.3 MB
- Windows 9x: 17.5 MB

• Windows NT 4.0: 16.0 MB

Software: NVIDIA Display Driver

Make sure the current version of the NVIDIA 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.

Hardware: Supported NVIDIA Products

Table 1.2 lists the NVIDIA products supported by the NVIDIA Display Driver software and the number of displays the GPU-based card supports.

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

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

 Table 1.2
 Supported NVIDIA Products

NVIDIA Desktop Products	NVIDIA Workstation Products	Number of Displays Supported Per Card
RIVA TNT2 family		1 — applies to all GPUs
RIVA TNT2 Ultra		in this category.
RIVA TNT2 Pro		
RIVA TNT2		
RIVA TNT2 M64		
NVIDIA Vanta		
NVIDIA Vanta LT		
RIVA TNT		1

 Table 1.2
 Supported NVIDIA Products (continued)

Supported Languages

The following languages are supported in the NVIDIA tabs that are accessible from the Windows **Display Properties** > **Settings** > **Advanced** option.

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 Properties 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 multidisplay 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 tabs 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 24.

About the NVIDIA Feature-Specific Tabs

Examples in This Guide

- For example purposes, the NVIDIA tabs 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 tab.
- The Windows 2000 NVIDIA tabs shown in this document also apply to Windows NT 4.0 and Windows XP; exceptions are noted, where applicable.

Accessing the NVIDIA Tabs

To access the NVIDIA tabs, 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 GPUbased graphics card that is installed on your computer.

- **4** Click **Additional Properties** and then any of these tabs to access its properties:
 - OpenGL Setting
 - Direct3D Settings
 - Desktop Utilities
 - Overlay Controls
 - 3D Antialiasing
- **5** To return to the NVIDIA GPU tab, click **OK** from any of the tabs 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 9x 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.

CHAPTER



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" on page 11
- "Release 25 Enhancements" on page 12
- "Release 20 Enhancements" on page 13
- "Release 10 Enhancements" on page 13
- "Release 6 Enhancements" on page 14
- "Release 5 Enhancements" on page 16

Driver Release History

Release 25 is the latest NVIDIA Display Driver software for Windows. 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.

Driver	Name	Versions	Comments
Release 25	Detonator XP	26.00 - 30.82	Releases ongoing
Release 20	Detonator XP v2x.xx	21.83 - 23.xx	
Release 10	Detonator 3 v1xxx	10.00 - 17.xx	
Release 6	Detonator 3	6.09 - 8.xx	
Release 5	Detonator 2	5.00 - 5.xx	

 Table 2.1
 NVIDIA Display Drivers for Windows

	1 5		
Driver	Name	Versions Comments	
Release 4	Detonator	3.00 - 3.xx	
Release 3	Detonator	1.83 - 2.42	
Release 2		1.05 – 1.31	

Table 2.1 NVIDIA Display Drivers for Windows (continued)

Release 25 Enhancements

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

- **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 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 and the *nView Desktop Manager User's Guide*.

- **Note:** Desktop Manager has been significantly redesigned from its previous TwinView version. nView Desktop Manager is now a separate item on the Windows Control Panel group. You can click this item to access the Desktop Manager configuration tabs and windows.
- **NVIDIA Display Properties** (the topic of this guide) now offers improved features for multi-display functionality, including Clone modes and Horizontal and Vertical Span modes.
- **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 offered new features not found in previous releases of the NVIDIA 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 and
 - accelerated Windows XP 3D performance through the NVIDIA XPress Link technology.

Release 10 Enhancements

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

- "TwinView" on page 14
- "Digital Vibrance Control" on page 15
- "OpenGL" on page 15
- "Direct3D" on page 15
- "Cursor Trails Support" on page 15
- "Display Properties Settings Advanced Tabs" on page 15

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, redgreen-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 the following operating systems and modes:

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

Display Properties – Settings – Advanced Tabs

TwinView, Digital Vibrance Control, OpenGL, and Direct3D features have associated NVIDIA-specific tabs from which the above-mentioned features can be configured.

Release 5 Enhancements

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

- "OpenGL" on page 16
- "Direct3D" on page 18
- "Display Properties Settings Advanced Tabs" on page 18

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	
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 multi-textured TexCoord2f+Color4ub+Vertex3f.
 - Vertex array range extension is fully functional.
- Windows **Display Properties** > **Settings** > **Advanced** tabs 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 from the NVIDIA OpenGL properties tab.)
- Default anisotropic filtering can be triggered by checking the anisotropic filtering box on the NVIDIA OpenGL properties tab.
- 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**.)

Display Properties – Settings – Advanced Tabs

NVIDIA now provides tabs (**Display Properties** >**Settings** > **Advanced**) for Windows NT 4.0 and Windows 2000.





INSTALLATION AND UNINSTALLATION

This chapter contains the following major sections:

- "Before You Begin" on page 20
- ".About the NVIDIA Display Driver Installation" on page 21
- "Uninstalling the NVIDIA Display Driver Software" on page 22

Before You Begin

In order to access the NVIDIA Display Properties tabs, 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-bystep 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 24.
- 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 22.
- 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.

C H A P T E R



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" on page 24
- "Windows Dualview Mode" on page 25
- "nView Span Modes: Windows 2000/XP" on page 30

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:

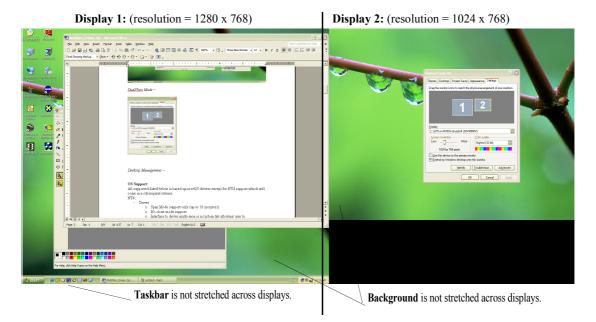
- Windows places the taskbar on only a single display.
- Windows replicates (rather than stretches) the background on each display.
- When you maximize an application, it maximizes only to the single display, and so on.

Figure 4.1 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 tab. In addition, Dualview operation is a required mode of operation if you run with more than two displays under Windows 2000/XP.

Figure 4.1 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 tab and see only one icon in the display.

The NVIDIA Desktop Utilities tab 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 tab (Figure 4.2).
- 8 At the bottom of the Desktop Utilities tab, 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 4.2 NVIDIA Desktop Utilities Tab: Enabling Dualview in Windows 2000

ditional GeForce4	Ti 4600 P	Properties	?
3D Antialiasing Settings OpenGL Settings 0	 Iverlay Controls	Direct3D Set Deskto	ings pUtilities
()	/IDIA		
The "QuickTweak" taskbar utili features and presets you've con from the Windows taskbar.			
Display the QuickTweak icc	on in the taskbar		
Select takkar jaan			<i>¥</i> .
The Desktop Manager provides and helps you organize your app desktops.			
Enable Desktop Manager	Desktop Mor	inger Gonfigurati	20
Treat multiple outputs on an display devices.	nView-capable	board as separa	be
		Bestore (Defaults

9 Click Apply.

10Restart 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 monitor icons appear on the Settings tab now.
- **12**For the steps that follow, refer to the windows shown in "Display Properties Settings For Dualview Mode" on page 29.
- **13**Now right click the monitor icon that you need to "**Attach**" to display a popup properties menu.
- 14Click 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 tab) and restart your computer.

Windows XP and Windows 9x

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 monitor icons appear on the Settings tab.
- 6 For the steps that follow, refer to the windows shown in "Disabling Dualview Mode For nView Span/Clone Modes" on page 31.
- 7 Now right click the monitor 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.

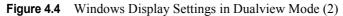
You are now in multi-display Dualview mode.

Display Properties Settings For Dualview Mode

The Display Properties Settings shown in Figure 4.3 and Figure 4.4 apply to all the Windows operating systems (Windows 2000/XP and Windows 9x) in Dualview mode. Confirm that your display settings match the figures.

Display Properties ? × Themes Desktop Screen Saver Appearance Settings Drag the monitor icons to match the physical arrangement of your monitors. Display. 1. Default Monitor on NVIDIA Quadro2 MXR/EX ٠ Screen resolution Color quality Less _____ More Highest (32 bit) Ŧ 1152 by 864 pixels 🔽 Use this device as the primary monitor Extend my Windows desktop onto this monitor Troubleshoot... [dentify Advanced 0K Cancel

Figure 4.3 Windows Display Settings in Dualview Mode (1)





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 4.5 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.

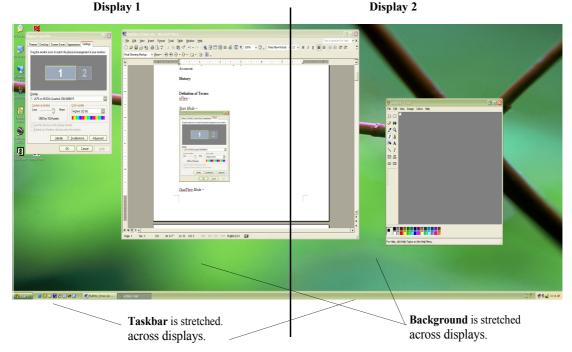


Figure 4.5Multiple Displays in nView Horizontal Span Mode

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 4.5.

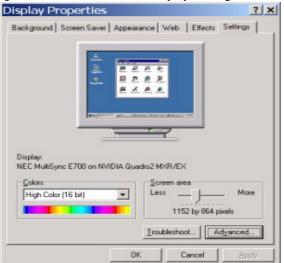
If you maximize an application, the application will be maximized to fill the large "logical" display screen -i.e., both displays.

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 tab (Figure 4.2).
- 2 Click Apply and restart your computer.
- **3** Once you log back in to your computer, you can access the nView tab to enable nView Clone or Span modes.
- *Note:* When you are in Windows 2000 Span or Clone modes, your Windows Display Properties Settings tabs shows only one monitor icon (shown in Figure 4.6), unlike Windows XP, which shows two monitor icons.

Figure 4.6 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 tab shows "two" monitor 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 tab reflects the configurations shown in Figure 4.7 through Figure 4.9.

Figure 4.7 shows that only the first display device of the two displays (as represented by the number "1") is active and Figure 4.8 through Figure 4.9 show that the second display device (represented by the number 2) is not attached.

Figure 4.7 Windows XP: Display Settings in Dualview Mode with Second Display Disabled (1)

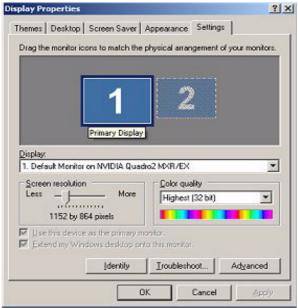


Figure 4.8 Windows XP: Display Settings in Dualview Mode With Second Display Disabled (2)

play Properties	<u> </u>
Themes Desktop Screen Saver A	Appearance Settings
Drag the monitor icons to match the p	hysical arrangement of your monitors.
	2
	Not Active
Display:	0
2. Plug and Play Monitor on NVIDIA	
Screen resolution	Color quality
	Highest (32 bit)
	and the second
1024 by 768 pixels	
1024 by 768 pixels	nitor.
Use this device as the primary mo Estend my Windows desktop onto	o this monitor.
Le this device as the primary mo	
Use this device as the primary mo Estend my Windows desktop onto	this monitor.

Figure 4.9 Windows XP: Display Settings in Dualview Mode With Second Display Disabled (3)

play Properties	?
hemes Desktop Screen Saver	Appearance Settings
Drag the monitor icons to match the p	physical arrangement of your monitors.
	3
	Attached
	Primary
	Identify
Display. 2. Plug and Play Monitor on NVIDIA	Quadro2 MXR/EX
Screen resolution	Color quality
Less More	Highest (32 bit)
1024 by 768 pixels	
Let this device as the primary mo	
Extend my Windows desktop ont	o this monitor.
[dentily	Iroubleshoot Advanced
0	Cancel Apoly
0	Cancel Apply

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 tab is shown in Figure 4.10.

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

Figure 4.10 Windows 2000/XP: nView Display Modes

General Adapter	Monitor Troubleshooting
Color Management 🧧 🄮	Quadro2 MXR/EX 🛛 💁 nView
iew allows you to connect two : splay, digital display, or TVJ to a	separate output devices (analog a single graphics board.
View Modes	
C Standard (nView disabled	f) 🕞 Horizontal span
C <u>C</u> lone	C ⊻ertical span
	2
isplay:	
nView Display 1: Analog Display	
Make this the primary display Disable auto-parning on sec Eorce detection of a monitor	ondary device (viewport lock)
	Detect Displays Device Settings >:

CHAPTER



NVIEW APPLICATIONS

This chapter contains the following sections:

- "nView Multi-Display Options" on page 35
- "Using Display Setup Modes" on page 36
- "nView Applications" on page 36

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 Display 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 39.

Using Display Setup Modes

The NVIDIA Display Driver tabs include several display modes for your multi-display configuration.

• **nView Span mode:** In this mode, the desktop area is spread across both displays. The desktop may be "stretched" horizontally or "stacked" vertically, depending on your needs, as explained in "Horizontal & Vertical Span Modes" on page 52 or "Extended Desktop: Windows 98/Me" on page 57.

For further details on configuring multiple displays, see "Using Multi-Display Modes: Windows Dualview And nView Span/Clone" on page 24.

• **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 44.)

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 50 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 83.

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

6



This chapter contain the following major sections:

- "Notes Before You Begin" on page 39
- "Accessing the nView Tab" on page 40
- "Standard Mode" on page 41
- "Accessing the Configuration Options" on page 43
- "Clone Mode" on page 44
- "Horizontal & Vertical Span Modes" on page 52
- "Extended Desktop: Windows 98/Me" on page 57
- "Other Configuration Options" on page 62

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 41
 - "Clone Mode" on page 44

- "Horizontal & Vertical Span Modes" on page 52 (*only* for Windows XP/ 2000/NT 4.0)
- Under Windows 98 and Windows Me, your NVIDIA GPU-based multidisplay graphics card supports the Windows Extended Desktop feature. To use this feature, see "Extended Desktop: Windows 98/Me" on page 57.
- Windows 2000 tabs also apply to Windows NT 4.0 and XP; exceptions are noted where applicable.

Accessing the nView Tab

If you have only one display device connected, the nView tab will only have Standard (single-display) mode enabled and Clone mode disabled. In singledisplay 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 93) on the NVIDIA GPU tab (Figure 6.1), provided these features are not nView-based.

To access the nView tab, 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 31.
- 4 From the Windows Display Properties Settings tab, click Advanced.
- **5** Click the **NVIDIA GPU** tab to display 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 tab. See the figures in "Standard Mode" on page 41, which show the nView settings 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 tab.

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 (Q	Quadro2 MXR) Tab
--------------------------	------------------

General	Adapter	Monitor	Troublesho	oling
Color Manage	ement 🥌	GeForce4 Ti 46	00 💁 n	View
Display Adapte	r Information —			
Graphics Proc	essor: GeFord	e4 Ti 4600		
Bus Type:	AGP (F	PCI mode)		
BIOS Version	4.25.00	1.21.01	NVIDIA	
On-Board Mer	mory: 128 MB	3		
IRQ:	9		graphics	
TV Encoder T	ype: Conexa	ant CX25871	• 14 · · · +	
System Informa	dian			
System Proce		link	el Pentium(r) III wi	
Total Physica		Inte	261,4	
rotal Physica	r memory.		201,9	29 N.
Free Directory			107.0	
Free Physical			167,0	
			167,0	
			167,0 Version	
Driver Version I Filename nv4_disp.dl	Information Description Display driver		Version 6.13.10.2790	
Driver Version I Filename nv4_disp.dll nv4_mini.sys	Information Description Display driver Display driver n		Version 6.13.10.2790 6.13.10.2790	
Driver Version I Filename nv4_disp.dl nv4_mini.sys nvogint.dl	Description Display driver Display driver OpenGL install	able client driver	Version 6.13.10.2790 6.13.10.2790 6.13.10.2790	
Driver Version I Filename nv4_disp.dll nv4_mini.sys nvogint.dll nvcpl.dll	Information Description Display driver Display driver n OpenGL install Display Propert	able client driver lies extension	Version 6.13.10.2790 6.13.10.2790 6.13.10.2790 6.13.10.2790	
Driver Version I Filename nv4_disp.dl nv4_mini.sys nvogint.dl	Description Display driver Display driver OpenGL install	able client driver lies extension	Version 6.13.10.2790 6.13.10.2790 6.13.10.2790	
Driver Version I Filename nv4_disp.dll nv4_mini.sys nvogint.dll nvcpl.dll	Information Description Display driver Display driver n OpenGL install Display Propert Taskbar utilly I	able client driver ies extension brary	Version 6.13.10.2790 6.13.10.2790 6.13.10.2790 6.13.10.2790 6.13.10.2790 6.13.10.2790	160 KE
Driver Version I Filename nv4_disp.dl nv4_mini.sys nvogInt.dl nvcpl.dl	Information Description Display driver Display driver n OpenGL install Display Propert	able client driver ies extension brary	Version 6.13.10.2790 6.13.10.2790 6.13.10.2790 6.13.10.2790	160 KE

Standard Mode

The Standard mode option in the nView tab 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 tab.

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

Figure 6.4 shows the nView tab 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* "Device Selection And Configuration" on page 63.

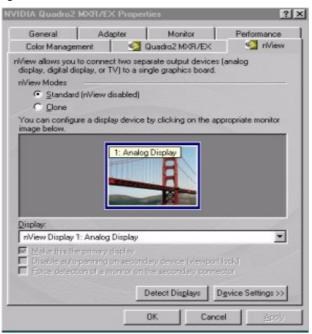
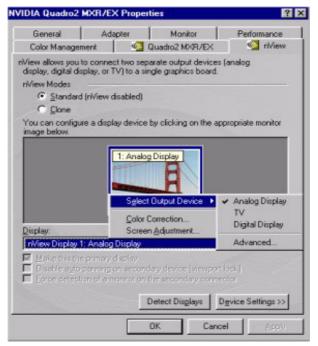


Figure 6.2 nView Tab in Standard Mode: Windows 98

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



	Adapter	Monitor	Troubleshooting
Color Manage	ament	SeForce4 Ti 4600	S nView
		o separate output device a single graphics board	
	rd (nView disabl	ed) C Horiz	ontal span
C Clone	a firrion doub	C Vertic	
image below.			
		Analog Display	
		Select Output Device	🔹 🖌 Analog Display
Display: InView Display		Color Correction Screen Adjustment	TV Digital Display
Make this t	1. Analos he primary displa	Screen Adjustment.	Digital Display

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

Accessing the Configuration Options

On the nView tab, 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 tab 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 tab. If you turn on the devices after you have opened the nView tab, click **Detect Displays** to enable the devices.

To access nView Clone mode, follow these steps:

- 1 Be sure your display devices are turned on before you access the nView tab.
- 2 Click the Clone mode option on the nView tab 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 the nView Clone mode setting.
- **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 tab. Figure 6.9 correctly shows Analog Monitor as the selected output device for display 1.
- 7 Click **OK** to return to the nView tab.

- 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 tab, 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 79.

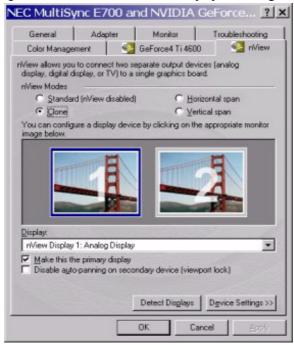
- **11** Then click **Advanced** . . to display the Device Selection tab, which confirms that the **TV** option is enabled.
- **Figure 6.5** nView Clone Mode Context Menu: Display 1= CRT (Windows 98)

	MXR/EX Prop		
General	Adapter	Monitor	Performance
Color Manager	ment 🥸	Quadro2 MXR/EX	nView
		eparate output devices single graphics board.	(analog
Wiew Modes			
C Standard	(nView disabled)		
Clone			
	re a display devic	e by clicking on the ap	opropriate monitor
mage below.			
1: An	alog Display	Select Dutput Dev	ice
	H	✓ Primary Display	
	H	Color Correction	
	The local division in which the local division is not the local division of the local division is not the local division of the loca		
-		Screen <u>A</u> djustmen	6
			1
2isplay:			the states
nView Display 1	I: Analog Display		
Make this the	e primary display		
✓ Disable auto-	panning on seco	ndary device (viewport	lock)
Eorce detect	ion of a monitor o	whe secondary come	
		Detect Displays	Device Settings >>

General Adapter	Monitor	Performance	
Color Management 🧐 G	Juadro2 MXR/EX	💁 riView	
view allows you to connect two sepa display, digital display, or TV) to a sin		analog	
Wiew Modes			
C Standard (riView disabled)			
(Clone			
You can configure a display device t	by clicking on the app	ropriate monitor	
nage below.			
	-		
	2 Digital Displa	<u>~</u>	
	Sglect Outp	ut Device 🕨 TV	
	Primary Disp	vlay 🗸 Digital D	ispl
	✓ Lock Pan P	osition Advance	ed.
	Color Correc	tion	
Display.	Screen Adu	istment	
nView Display 2: Digital Display	Change Be	aktion 5	
	Unange ne	SOLUDOFL	

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)



General	Adapter	Monitor	Troubleshooting
Color Manager	ment 🛛 🛀	GeForce4 Ti 4600	😒 nView
		parate output device single graphics board	
nView Modes			
C Standar	d (nView disabled)	C Horiz	ontal span
Glone		C Yertic	al span
You can config image below.	ure a display devic	e by clicking on the	appropriate monitor
Display.	1. Analog Display	Select Outpu ✓ Primary Disp Color Correct Screen Adjus	lay tion
	e primary display panning on secor	ndary device (viewp	art lock)
		Detect Displays	Device Settings >:

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

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

Device Settings	<u>? ×</u>
Device Selection Color Correction	
Select the output device on which to display	Windows:
Analog Monitor	
C Digital Flat Panel	
C DV	
Format: NTSC-M	Change Eormat
Video gutput formst: Auto-sele	ct
ОК	Cancel Apply

	Adapter	Monitor	Troubleshooting	
Color Manage	ement 🧕 🍕	GeForce4 Ti 4600) 🕙 nView	
		separate output devi a single graphics boa		
C Standa	rd (nView disables	d) C Hor	izontal span	
Clone		C Ver	tical span	1000
			lect Output Device	TV ✓ Digital Display
1000		COLUMN THE SECOND		
Display:		Lo	ck Pan Position	Advanced
	2 Digital Display		ck Pan Position lor Correction	Advanced
nView Display	he primary display	Co		
nView Display	And the Andrewson of Concerning Street, or other Designation of Conc	Co Sc ondary devic	lor Correction	

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



Device Settings	<u>? ×</u>
Device Selection Color Correction	
Select the output device on which to display	Windows:
C Analog Monitor	
Digital Flat Panel	
C IV	
Format: NTSC-M	Change Eormat
Video guiput format: Auto-sele	ct 💌
Detect Displays	Device Adjustments
OK	Cancel Apply

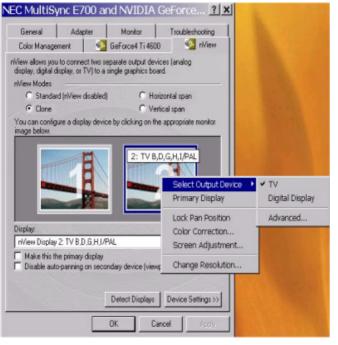


Figure 6.12 nView Clone Mode Context Menu: Display 2 = TV (Windows 2000/XP)

Figure 6.13 nView Device Selection Tab: Display 2 =TV

Device Settings	<u>? ×</u>
Device Selection Color Correction	
Select the output device on which to display	y Windows:
C Analog Monitor	
C Digital Flat Panel	
• N	
Format: NTSC-M	Change Format
Video <u>o</u> utput format: Auto-se	lect
Detect Displays	Device Adjustments
ОК	Cancel Apply

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 tab, 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 tab, 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 tab of your primary display.

Follow these steps to enable Virtual Desktop:

1 From the nView tab, 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.

Device Con	figuration	×
	Screen resolution: 800 by 600 pixels	-
-		2
	Refresh rate: 60 Hertz	
	OK Apply Car	icel

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 tab 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 9x 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:

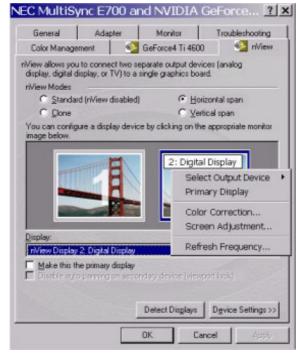
- 1 Click the Horizontal or Vertical Span mode option on the nView tab and click Apply.
- 2 Click OK and Yes when the messages appear.
 - If you just switched from Standard to one of the Span modes, your DFP or TV display will be activated. If needed, click **Detect Displays** to enable the display devices.
 - 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

General Adap	xter Monitor	Troubleshooting
Color Management	SeForce4 Ti 460	10 S nView
Wiew allows you to conne display, digital display, or	ct two separate output der TV) to a single graphics bo	
nView Modes		
C Standard (nView)	disabled) 📀 <u>H</u> o	orizontal span
C Clone	C Ve	stical span
1: Analog D	Select Outpu	lay
Display:	Color Correct	Contraction of the second
Wiew Display 1: Analog	Dag Screen Adjus	tment
Make this the primary Disable auto panning	on secondary device (view	
	Detect Displays	Device Settings >>

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)



	Adapter	Monitor	Troubleshoot
Color Managerr	ent 🛛 💁 G	Juadro2 MXR/EX	💁 nView
		arate output devices igle graphics board.	(analog
C Standard	(nView disabled)	 Horizon 	ital span
C Clone		C Vertical	Ispan
		Select Output Dev Primary Display Color Correction Screen Adjustmen	
	Angles Diselau		
Display: nView Display 1	a subudy		

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)

General	Adapter	Monitor	Troubleshooting
Color Manag	ement 🦉	GeForce4 Ti 460	nView
		separate output der a single graphics bo	
C Standa	rd (nView disabled	a • He	orizontal span
C Clone		C Ve	artical span
		Sel	ect Output Device
Display:		Col	or Correction
rWiew Display	2: TV B,D,G,H,I/	ADA1	een Adjustment
	he primary display or proming on and	onderv device (vies	

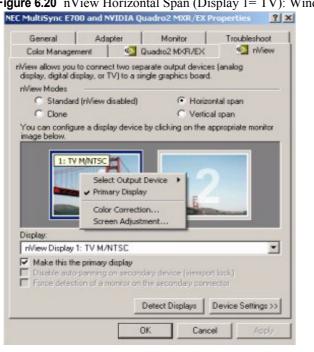


Figure 6.21 nView Vertical Span Mode (Display 1= CRT): Windows 2000/XP

General	Adapter	Monitor	Troubleshooting
Color Manage	ement 🧕	GeForce4 Ti 4600) 🕙 nView
		eparate output devi single graphics boa	
Wiew Modes			
C <u>S</u> tanda	nd (nView disabled)	СНо	izontal span
C <u>C</u> lone		(Ver	tical spari
	jure a display devic	e by clicking on the	e appropriate monitor
mage below.			
	1:	Analog Display	
		LIN S	elect Output Devic
		✓ P	rimary Display
	101		olor Correction
			creen Adjustment
			o een Aujusunen.
<u>D</u> isplay:		S. States	S. A
riView Display	y 1: Analog Display		
	he primary display		
	the second se		
	the second se	ndary device (view	
	the second se	ndery device (view	
	the second se	ndary device (view Detect Displays	
	the second se		port (spk)

General	Adapter	Monitor	Troubleshooting
Color Manage	ment 🧃	GeForce4 Ti 460) 💁 nView
		separate output dev a single graphics bos	
nView Modes			
C Standar	d (riView disable	d) C Ho	izontal span
C Done		(Mer	tical span
	1	: Digital Display	
	1	The second se	
			ect Output Device
		 Prir 	nary Display
		Cok	or Correction
		Sor	een Adjustment
Display:			2
nView Display	1: Digital Display	y	*
	ne primary display		
🗖 Dinable aut	a perning on est	condary device (view	part look)
		Detect Displays	Device Settings >>
		Country Countryle	-True counders

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)

General	Adapter	Monitor	Troubleshooting
Color Manage	ment 🛛 💁 G	ieForce4 Ti 4600	weiVin 🄮
	u to connect two sept fisplay, or TV) to a sin		
	rd (nView disabled)	C Horizo	ontal span
Contractor Contractor	jure a display device l		
	2: 0	gital Display	
Disclar	2: Di	Select	Output Device y Display
Make this ti	2: Digital Display he primary display	Select Primar Color C Screen	
nView Display	2: Digital Display	Select Primar Color C Screen	y Display Correction
nView Display	2 Digital Display he primary display	Select Primar Color C Screen	y Display Correction Adjustment

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 tab 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 tab 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).

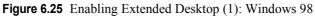
Note: If you get a Compatibility Warning message, read the message carefully. Then click **OK**

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 60.
- **5** Click **Advanced**. Notice that the nView tab is not available when Extended Desktop is enabled (Figure 6.27).

Display Properties
Background Screen Saver Appearance Effects Web Settings
Drag the monitor icons to match the physical arrangement of your monitors
Display:
1. ViewSonic VPD150 on NVIDIA GeForce2 MX/MX 400
Colors Screen area High Color (16 bit) Screen area Less More 1024 by 768 pixels
Extending Windows desktop onto this monitor.
OK Cancel Apply

Figure 6.24 Display Settings: Windows 98





igure 6.26 Enabling Extended Desktop (2): Windows 98
Display Properties ? 🗙
Background Screen Saver Appearance Effects Web Settings
Drag the monitor icons to match the physical arrangement of your monitors
Display: 2. NEC MultiSync E700 on NVIDIA GeForce2 MX/MX 400
Colors Figh Color (16 bit) Galaxies Gal
Extend my Windows desktop onto this monitor.
OK Cancel Apply

$(\mathbf{0})$, \mathbf{W} , $\mathbf{1}$ 00 Fi . . .

Figure 6.27 nView Tab Disabled: Windows 98

			evice Selection	
General	Adapter	Monitor	Performance	Color Management
Display				
Eont Siz	ĸ			
Small F	onts		-	
Normal s	ize (95 dpi)			
☐ Show	v gettings ico	on on task ba		
- Compatit	-D.,			
Some pr			if you do not re	start your computer
After I ch	hange color :	settings:		
	art the comp	outer before ap	plying the new	color settings.
			thout restarting.	
• Ask	me before at	pplying the ne	w color settings.	

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 monitor icons in the Windows Settings tab.

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).

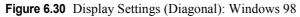
Figure 6.28 Display Settings (Horizontal): Windows 98

isplay Properties 📪
Background Screen Saver Appearance Effects Web Settings
Drag the monitor icons to match the physical arrangement of your monitors
Display: 2. NEC MultiSync E700 on NVIDIA GeForce2 MX/MX 400
Colors Screen area
640 by 480 pixels
Extend my Windows desktop onto this monitor.
OK Cancel Apply

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

play Properties ackground Screen Saver Drag the monitor icons to ma			
	1		
Display: 2. NEC MultiSync E700 on 1 - Colors		2 MX/MX 400 en area	<u>×</u>
High Color (16 bit)	Less	640 by 480 pi	More xels Advanced
,	ок	Cancel	Acoly

Figure 6.29 Display Settings (Vertical): 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 63.

For details on configuring additional features, see "Additional Features and Enhancements" on page 93.

CHAPTER

7

DEVICE SELECTION AND CONFIGURATION

This chapter contains the following major sections:

- "Switching Displays from the nView Tab" on page 63
- "Switching Displays With nView Disabled" on page 69
- "Device Adjustments: Analog Monitor" on page 74
- "Device Adjustments: Digital Flat Panel" on page 76
- "TV Settings" on page 79

Switching Displays from the nView Tab

If you have the nView tab 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.

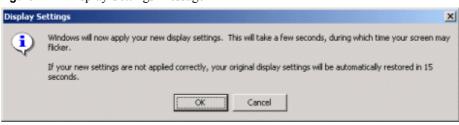


Figure 7.1 Display Settings Message

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 Clone or Span mode selecting on the nView tab.
- 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)

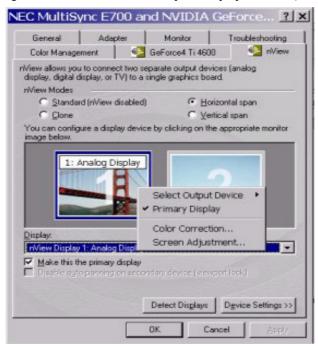
Figure 7.4 nView Clone Mode (DFP as Primary): Windows 2000/XP

General Ada	pter Monitor	Troubleshooting
Color Management	GeForce4 Ti 46	00 S nView
	ect two separate output de TV) to a single graphics bo	
/iew Modes		
C Standard (nView	disabled) C H	orizontal span
@ Clone	CV	ertical span
1: Digital D	Select Outpu Primary Disp Color Correc Screen Adju	tion
splay		
nView Display 1: Digital	and a first of the second s	2
Make this the primary Directle autopermit	r display For escondary device (vie	wport (sok)

General Adap	ter Mo	nitor	Troubleshooting
Color Management	GeFord	e4 Ti 4600	🛀 riview
View allows you to connec display, digital display, or T			(analog
nView Modes			
C Standard (nView d	isabled)	C Horizor	stal span
(Clone		C ⊻ertica	Ispan
mage below.			ect Output Device hary Display
Display:		Cole	or Correction
nView Display 2: Analog	Display	Sch	een Adjustment
Make this the primary of Disable eutopermitie		once Cha	nge Resolution
	Detect	Displays	Device Settings >>

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)



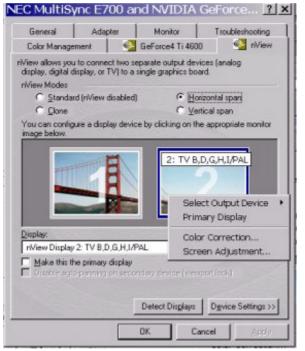
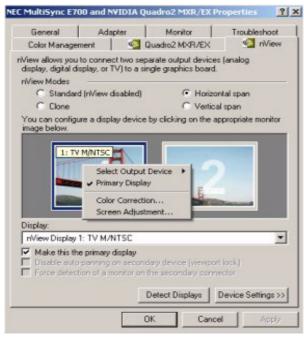


Figure 7.7 nView Horizontal Span Mode: Display 2 = TV (Windows 2000/XP)

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



General Adapter	Monitor	Troubleshooting
Color Management	😔 GeForce4 Ti 4600) 🕙 riView
View allows you to connect ty display, digital display, or TV) (
rView Modes		
C Standard (nView disat	bled) C Ho	izontal span
C <u>C</u> lone	Ver Ver Ver	tical span
You can configure a display o image below.	device by clicking on th	e appropriate monitor
Indige Bellett.		-
	1: Analog Display	
		elect Output Device
	• P	rimary Display
		olor Correction
		creen Adjustment.
Diselaur		
Display:	elau.	
riView Display 1: Analog Dis	and the second se	
nView Display 1: Analog Dis ☑ Make this the primary disp	olay	read local 2
	olay	port (ack)
riView Display 1: Analog Dis ✓ Make this the primary disp	olay	port (ask)
riView Display 1: Analog Dis ✓ Make this the primary disp	olay	port (sold)
riView Display 1: Analog Dis ✓ Make this the primary disp	Nay secondary device (view Detect Displays	

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)

General	Adapter	Monitor	Troubleshooting
Color Manage	ment s	🔰 GeForce4 Ti 460	0 💁 nView
		separate output dev a single graphics box	
Niew Modes			
C Standar	d (riView disable	ed) C Ho	rizontal span
C glone		(• Ver	tical span
	ure a display de	vice by clicking on th	e appropriate monitor
mage below.			
		1: Digital Display	
			ect Output Device
		Prir	nary Display
		Col	or Correction
		Sor 4	een Adiustment
Display:			
	1: Digital Displa	NU	*
and the second se	ne primary displa		
	and the second se	y condary device (view	
			1
		Detect Displays	Device Settings >>

General	Adapter	Monitor	Troubleshooting
Color Manage	ment 🛛 🧐 G	ieForce4 Ti 4600	🛀 nView
	to connect two sep- isplay, or TV) to a sin		
	d (nView disabled)	C Havia	ontal span
C Clone	d (niview disabled)	(Vertic	
	2: D	igital Display Select	Output Device
	2:0	Select	Output Device y Display
lisplay		Select Primar	y Display
nView Display	2: Digital Display	Select Primar Color (y Display Correction
nView Display Make this th	2: Digital Display ee primary display	Color Color	y Display Correction Adjustment
nView Display Make this th	2: Digital Display	Color Color	y Display Correction
nView Display Make this th	2: Digital Display te primary display solenning on second	Color Color	y Display Correction Adjustment

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 tab or do not have nView enabled but have the NVIDIA 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 tab (Figure 7.12).
- 2 Click Advanced.
- **3** Click the **Device Selection** tab to display the Device Selection tab. 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 tab. Use this feature if you have plugged in any displays after accessing the Device Selection tab.

Display Properties				? X
Background Scree	n Saver Appear	ance Web Et	fects Setting	
Display: NEC MultiSync E70		₽ ₽ ₽ ₽ 		
Colors High Color (16 bi			Mo	же
		Iroubleshoot	Adyanced	£
	0	Cano	el Ar	aply

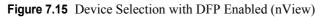
Figure 7.12 Display Properties Settings



NEC MultiSync E700 and NVIDIA GeForce3 Pro	perties ? X
General Adapter Monitor Troubleshoot GeForce3 Device Selection	
Select the output device on which to display Wine	dows:
Analog Monitor	
C Digital Flat Panel	
CIV	
Format: NTSC-M	Change Format
Video <u>o</u> ulput format: Auto-select	T
Detect Displays	Device Adjustments
OK	Cancel Apply

Figure 7.14	Device Sel	lection CRT	(nView)
-------------	------------	-------------	---------

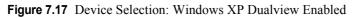
Device Settings	<u>? ×</u>
Device Selection Color Correction	
Select the output device on which to display Win	dows:
Analog Monitor	
C Digital Flat Panel	
C IV	
Format: NTSC-M	Change Eormat
Video gutput format: Auto-select	T
Detect Displays	Device Adjustments
OK	Cancel Apply



evice Settings			? ×
Device Selection Color C	orrection		
Select the output device of	on which to display W	/indows:	
C Analog Monitor			
Digital Flat Panel			
CIV			
Format: NTSC-M	- and the second second	Change Eormat	
			-
Video <u>o</u> utput format:	Auto-selec	<u> </u>]
	Detect Disglays	Device Adjustments]
	OK	Cancel App	b .

Device Settings	<u>? ×</u>
Device Selection Color Correction	
Select the output device on which to	display Windows:
C Analog Monitor	
C Digital Flat Panel	
• IV	
Format: NTSC-M	Change Format
Video <u>o</u> utput format:	Auto-select
Detect D	isplays Device Adjustments
0	K Cancel Apply

Figure 7.16 Device Selection Tab with TV Enabled (nView)



General Adapter	Monitor	Troubles		olor Management Color Correction
Select the output device	e on which	to display W	indows:	
Analog Monitor				
C Digital Flat Panel				
-c DA				
Format: NTSC-M			Chan	ge Eonnat
Video putput format		Auto selec		-
	Detect	Displays	Device A	djustments

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

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

E MultiSync E700 and NVIE	DIA GeForce3	Properties	?
General Adapter Moni	tor Troublesh Device Selection		
Select the output device on v	which to display V	Vindows:	
C Analog Monitor			
Digital Flat Panel			
C IV		Party and a second	
Format: NTSC-M		Change Eo	rmat
Video gutput formet:	Auto-selec	z	*
	letect Displays	Device Adjust	ments
]	ОК	Cancel	Apply

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 tab:

- **Note:** If you are in the nView tab, right click the monitor icon to display the context menu and choose **Screen Adjustment** to display the Screen Adjustment tab. Then go directly to step. 4 below.
- 1 Make sure you are in the Device Selection tab.
- **2** Confirm that the **Analog Monitor** option is selected on the Device Selection tab.
- 3 Click Device Adjustments to access the Screen Adjustment tab (Figure 7.19).

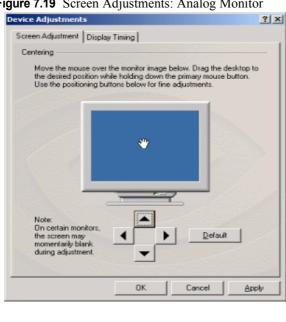


Figure 7.19 Screen Adjustments: Analog Monitor

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 tab:

- Note: If you are in the nView tab, right click the monitor icon to display the context menu and select Screen Adjustment to display the Screen Adjustment tab. Then click the Display Timing tab to open the Display Timing tab and go directly to step. 4 below.
- 1 Make sure you are in the Device Selection tab.
- **2** Confirm that the **Analog Monitor** option is selected on the Device Selection tab.
- **3** Click **Device Adjustments** then click the **Display Timing** tab to open the Display Timing tab.

Figure 7.20 Display Timing: Analog Monitor

Device Adjustments	<u>?</u> ×
Screen Adjustment Display Timing	
Liming Modes	-
Select the proper timing mode for your display.	
 Auto-Detect [let Windows determine the proper mode] 	
C General Timing Formula (GTF)	
C Discrete Monitor Timings (DMT)	
	-
Bestore Default	۱۱
OK Cancel App	6

- **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: 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 tab.

- *Note:* If you are in the nView tab, right click the Digital Flat Panel icon and select *Screen Adjustment* to display the Flat Panel Display tab. Then go directly to step. *4* below.
- 1 Make sure you are in the Device Selection tab.
- 2 Confirm that the **Digital Flat Panel** option is selected on the Device Selection tab.
- **3** Click **Device Adjustments** to access the Flat Panel Display tab (Figure 7.21).

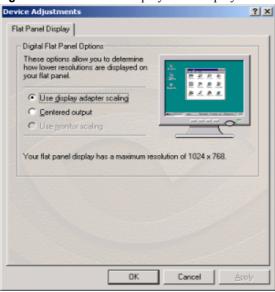


Figure 7.21 Flat Panel Display Tab: Display = 1

Panel Display Monitor Settings Digital Flat Panel Options These options allow you to determine how lower resolutions are displayed on your flat panel. • Use display adapter scaling • Centered output • Use genitor sceling • Use genitor sceling • Your flat panel display has a maximum resolution of 1024 x 768.	ce Adjustments	
These options allow you to determine how lower resolutions are displayed on your flat panel.	t Panel Display Monitor Settings	
how lower resolutions are displayed on your flat panel.	Digital Flat Panel Options	
Use display adapter scaling C gentered output C Use monitor scaling	how lower resolutions are displayed on	
C Use monitor scoling	Use display adapter scaling	ELAL
C Use monitor scoling	C Centered output	and an international end
Your flat panel display has a maximum resolution of 1024 x 768.	O Use monitor scaling	
	Your flat panel display has a maximum res	olution of 1024 x 768.

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.

Cancel

Figure 7.23 Digital Flat Panel Display - Centered Output

0K

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 tab, right click the Digital Flat Panel icon and select Screen Adjustment to display the Flat Panel Display tab, click Monitor Settings to open the Monitor Settings tab, then go directly to step. 4 below.
- 1 Make sure you are in the Device Selection tab.
- 2 Confirm that the **Digital Flat Panel** option is selected on the Device Selection tab.
- 3 Click Device Adjustments to access the Flat Panel Display tab.
- 4 Click Monitor Settings to open the Monitor Settings tab (Figure 7.24).
 - *Note:* The Monitor Settings tab in Figure 7.24 resembles the Monitor tab 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.

vice Adjustmer	its	?
Flat Panel Display	Monitor Settings	
-Monitor Type-		
Plug at	nd Play Monitor	
Monitor Setting	8	
Refresh Freque	DCK	
60 Hertz		
FO Hertz	: that this monitor cannot display. s box will allow you to set your display t not display correctly. This may lead to damaged hardware.	
FO Hertz	that this monitor cannot display. s box will allow you to set your display t not display correctly. This may lead to	
FO Hertz	that this monitor cannot display. s box will allow you to set your display t not display correctly. This may lead to	
FO Hertz	that this monitor cannot display. s box will allow you to set your display t not display correctly. This may lead to	
FO Hertz	that this monitor cannot display. s box will allow you to set your display t not display correctly. This may lead to	

Figure 7.24 Monitor Setting: DFP = Display 2

TV Settings

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

- *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 tab 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 tab, right click the TV monitor icon and click *Select Output Device* to display the Device Selection tab with the TV option enabled, as shown in Figure 7.25.
- **1** Make sure you are in the Device Selection tab.

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

Change Format: Regional Settings

From the Device Selection tab, 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

NEC MultiSync E700 and NVIDIA GeForce3 Proper	ties ? ×
General Adapter Monitor Troubleshooting	Color Management
Select the output device on which to display Windows	
C Analog Monitor	
C Digital Flat Panel	
e M	
Format: NTSC-M	hange <u>F</u> ormat
Video gutput format: Auto-select	
	1
Detect Displays Devi	ce Adjustments
OK Can	cel Apply

Figure 7.26 TV Regional Settings

Country	Format
Argentina	PAL-N (Combination) -
Belgium Belgium	PAL-B PAL-H
Brazil	PAL-M
Canada	NTSC-M
Chile	NTSC-M
Dhina	PAL-D

Figure 7.27 Device Selection: TV Video Output Format

Device Settings				<u>? ×</u>
Device Selection	Color Cor	rection		
Select the output	ut device or	which to display W	indows:	
C Analog M	Lonitor			
C Digital Fla	at Panel			
- IN -				
Format: NT	SC-M		Change E	ormat
Video <u>o</u> utpu	it format:	Auto-select Auto-select Composite S-Video-Ou	Video-Out	
	L	Detect Disglays	Device Adjust	tments
		ОК	Cancel	Apply

Device Adjustments: TV Output

From the Device Selection tab, click **Device Adjustments** to open a TV Output tab (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 overadjustment, 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 Tab

evice Adjustm	ents		<u>? ×</u>
TV Output			
Brightness	-	Elicker Filter:	Off
1		17 .	
Saturation		<u>H</u> e	store Defaults
	0	K Cancel	Apply

CHAPTER

8



This chapter contains the following major sections:

- "Accessing Video Mirror" on page 83
- "Video Mirror Settings" on page 89

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 fullscreen 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 35.)

Major features of Video Mirror, such as Zoom and Aspect Ratio, can be configured through the Full Screen Video Mirror tab. 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 tab features, as explained in the "Overlay Controls" on page 84.

Accessing Video Mirror

This section explains how to use the following settings:

- "Overlay Controls" on page 84
- "Video Mirror Controls" on page 87

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

The options in the Overlay Controls tab 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 9x nView Clone or Extended Desktop (non-nView)

Overlay Controls

Note: Be sure to click *Apply* whenever you make any changes to the tabs. 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 tab to one of these modes:
 - Windows XP/2000 Clone or Windows XP Dualview
 - Windows 9x Clone or Extended Desktop
- **3** To access the Overlay Controls tab, click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **Overlay Controls** tab.

Figure 8.1 through Figure 8.4 show Overlay Controls tabs using examples for GeForce3 and GeForce2 MX GPUs.

- **4** For description of the Overlay Settings, see "Overlay Settings" on page 85 below.
- **5** To use the Video Mirror controls, go directly to the next section "Video Mirror Controls" on page 87.

Overlay Settings

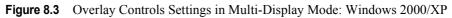
- Check here if you are having problems with your TV tuner (Windows 9x only): Activating this option forces the overlay software to be compatible with busmastering TV Tuner cards.
 - *Note:* It is recommended that you leave this option unchecked unless you experience problems with video playback, such 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 tab, 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.

Additional GeForce3 Pro	perties	<u>?</u> ×
3D Antialiasing Se OpenGL Settings		Direct3D Settings
Brightness:	98%	Enable video gverlay zoom Select screen region to zoom
		<u>R</u> estore Defaults
		OK Cancel Apply

Figure 8.1 Overlay Controls for GeForce3: Windows 2000/XP

itional GeForce2 M	(/MX 400 P	operties	?
3D Antialiasing S	Settings	Direct3D Settings	
OpenGL Settings	Overla	y Controls Desktop Utilitie	s
E.			
Brightness:	100%	Enable video gverlay zoom	
		Select screen region to zoom	
····.			
Contrast:	100%		
. ?			
Hue:	0*		
100.			
		Zoom control	-
Saturation	100%		
		<u>R</u> estore Defaults	
	0	K Cancel App	k

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



/MX 400 P	Properties
iettings	Direct3D Settings
Over	ay Controls Desktop Utilities
98%	F Enable video gverlay zoom
	Select screen region to zoom
100%	
0*	
100%	Zoom control
⊻ideo Mirro	Controls Bestore Defaults
	DK Cancel Apply
	98% 98% 100% 0° 100%

3D Antialiasing S	Settinas	Direct3D Settings
OpenGL Settings	Overlay Control	
E		
Brightness:	100% - Ena	ble video gverlay zoom
	Selec	t screen region to zoom
Contrast:	100%	
Hue:	0*	
. ?		
Saturation	100% <u>Zoom</u> c	in In
)		. ·
Check here if you a	re having problems wit	h your TV tuner
[Video Mirror Controls.	Bestore Defaults
	ок	Cancel Aoply

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 settings. 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 tab, click Video Mirror Controls to open the Full Screen Video Mirror tab.

The first time you enter this tab, the Disable option is selected and the Autoselect 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 tab become enabled as shown in Figure 8.5.

ull Screen Device	Enable video mirror zoom
C Disable	Select screen region to zoom
C Primary display	
Secondary display	
C Auto-select	
spect <u>R</u> atio	
Track overlay aspect	
C Source aspect	Zoom control
C Full screen	Foon country
C TV 4.3	
C Anamorphic 16:9	Irack overlay zoom
Allow driver to select the full som	een mode
	Restore Defaults
	r residie <u>D</u> eratars

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

3 Make any other changes you want (see "Video Mirror Settings" on page 89) and click **Apply**.

Windows 9x 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 tab.

- 1 From the Overlay Controls tab, click **Video Mirror Controls** to open the Full Screen Video Mirror tab. The first time you open this tab, 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 tab become enabled.
- **3** Make any other changes you want (see "Video Mirror Settings" on page 89) and click **Apply**.

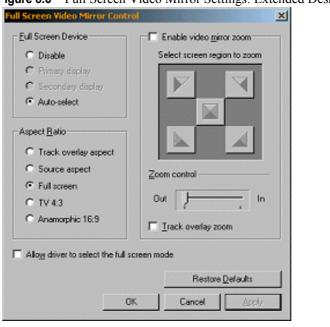


Figure 8.6 Full Screen Video Mirror Settings: Extended Desktop (Windows 98)

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 tab, these settings are available on the Full Screen Video Mirror tabs.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. (<i>See also</i> 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 	To enable Full Screen Device functionality in Clone mode, click either
 Secondary display 	Primary display or Secondary display as the full-screen Video Mirror device.

Features	Description		
Auto-select	This setting is not available under Windows 2000.		
	Auto-select enables Full Screen Device functionality in Windows 9 <i>x</i> 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.		
<i>Note: After selecting any of the abo settings to take effect.</i>	ve options, you may need to exit and restart your video application for the		
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.		
	<i>Note:</i> 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 <i>default</i> . 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 tab 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 tab:		
	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 tab, continue with these steps:		

 Table 8.1
 Video Mirror Settings (continued)

 Table 8.1
 Video Mirror Settings (continued)

Features	Description		
	6 Click OK to return to the Overlay Controls tab.		
	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 8

CHAPTER



Additional Features and Enhancements

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

- "Desktop Utilities" on page 93
- "Color Correction" on page 98
- "OpenGL Settings" on page 101
- "Direct3D Settings" on page 108
- "3D Antialiasing Settings" on page 111
- "Overlay Controls" on page 114
- "PowerMizer Settings (Laptops only)" on page 116

Desktop Utilities

Use the NVIDIA Desktop Utilities tab to do the following:

- Enable Dualview mode for Windows 2000/NT 4.0.
- Enable Desktop Manager and access its feature-specific tabs.
- 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 tabs.

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 Tab

To enable (load) or disable (unload) Desktop Manager through the NVIDIA Desktop Utilities tab, 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 Tab: Enabling Desktop Manager

	1
3D Antialiasing Settings	Direct3D Settings
OpenGL Settings 0	verlay Controls Desktop Utilitie
🥹 – <u>#</u> V	IDIA
	ty lets you conveniently access various figured in the Display Properties directly
Display the QuickTweak icc	on in the taskbar
Select taskbar joon:	Ţ
The Deskton Manager provides	enhanced el/iew m (ti-display functiona
and helps you organize your app	plications for use with multiple displays an
	enhanced nView multi-display functiona plications for use with multiple displays an Desktop Manager Configuration
and helps you organize your app desktops ▼ Enable Desktop Manager	plications for use with multiple displays ar
an dhelps you organize your app desktops. ☑ En able Desk top Man ager — Treat multiple outputs on an	plications for use with multiple displays ar
and helps you organize your app Jesktops. ✓ Enable Desktop Manager — Treat multiple outputs on an	plications for use with multiple displays an Desktop Manager Configuration
and helps you organize your app Jesktops. ✓ Enable Desktop Manager — Treat multiple outputs on an	plications for use with multiple displays ar Desktop Manager Configuration

- **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 Tab

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 96.

	tings	Direct3D Settings
OpenGL Settings	Overlay Controls	Desktop Utilities
©	VIDIA	
he "QuickTweak" taskb	ar utility lets you conven	iently access various
atures and presets you'v	e configured in the Disp	
Display the QuickTwee	ak icon in the taskbar	
Select taskbar joon:	NVIDIA Logo	-
/		
he Desktop Manager pro	vides enhanced nView	multi-display functionality
nd helps you organize yo		
nd helps you organize yo	ur applications for use v	ith multiple displays and
nd helps you organize yo	ur applications for use v	
nd helps you organize yo esktops	ur applications for use v	ith multiple displays and
- Treat multiple outputs	ur applications for use v gerDesktop Manaj	ith multiple displays and per©onfiguration
nd helps you organize yo esktops ' <u>E</u> nable Desktop Mana	ur applications for use v gerDesktop Manaj	ith multiple displays and per©onfiguration
nd helps you organize yo sektops. Enable Desktop Mana Treat multiple outputs (ur applications for use v gerDesktop Manaj	ith multiple displays and per©onfiguration

Figure 9.2 Desktop Utilities Tab: 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

 Enable nView Disable nView 	 3D Antialiasing Settings Custom OpenGL Settings Custom Direct3D Settings Custom Color Settings Rotation Settings 	+ + + + + +
🥺 nView Properties	💋 🖉 Desktop Manager	•
😼 nView Desktops	• 🕏 Adjust Display Properties	
	🖾 QuickTweak Properties <3 About	

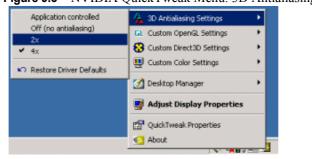
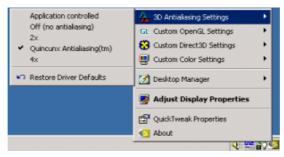


Figure 9.5 NVIDIA QuickTweak Menu: 3D Antialiasing Settings for Quadro2 MXR

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 tab, 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 tab now.
- **5** For further details on Dualview configuration, see "Windows Dualview Mode" on page 25.

Color Correction

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

- From outside the nView tab . . .
 - 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 tab (Figure 9.7).
- *From the nView tab.*.:
 - a Open the nView tab.
 - **b** Right click on a monitor icon.
 - c Select Color Correction from the context menu.

Figure 9.7 Color Correction Tab (non-nView access)

General	Adapter	Monitor	Performance	Color Mar	agement
🔮 Quad	to2 MXR/EX	🔄 De	vice Selection	Solor Color C	orrection
A		Brightnes	Activ	e Color Chann All channels	Off
A.		Contrast	ر ب		, 1.00
Custo <u>m</u> c	olor settings:	T Autor	natically apply the Save As Restore	ise settings at	:e
			OK Ca	ncel	Apply

vice Settings			?
evice Selection Color	Correction		
	/	Digital Vibrance:	Off
1		Active Color Char	net:
		All channels	-
all the	Brightness		
	.		
	Contrast		
NEXT S	1.	Y	1
	Gamma:		1.00
		— J——	
	•	and and	0.2.5
Custom color settings:	Automatica	ally apply these settings a	k startup
Casto <u>in</u> color searings.		Save As Del	ete
		Restore Hardware D	efaults
Sector Sector			
	ОК	Cancel	Apply

Figure 9.8 Color Correction Tab (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 tab 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 tab 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 tab, right click from the Windows desktop to display the context menu and then click **Properties** > **Settings** > **Advanced** > **NVIDIA GPU** tab > **Additional Properties** > **OpenGL Settings**.

3D Antialiasing Settings OpenGL Settings 0v	Fi 4600 Properties Direct3D Settings rerlay Controls Desktop Utiliti	
	enay controls Desktop Utilio	es
OpenGL.		
Performance and Compatibility Op	ptions	
Enable buffer region extension		
Allow the dual planes extens		
Default golor depth for textures:		1
	-	
Butter-flipping mode:	Auto-select	1
	Auto-select On by default	
Vertical sync:		
Vertical sync: Anisotropic Eiltering	On by default	
Vertical sync: Anisotropic Eiltering: Use up to 5 💼 MB of syste	On by default Disabled	tal tal ta
Butter flipping mode: Vertical sync: Anisotropic Eitering: Use up to 5 📑 MB of syste Custom OpenGL settings:	On by default Disabled	

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-mipmaplinear 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 tab (Figure 9.10).

For details, see "OpenGL Stereo Settings: If you checked the Enable Quadbuffered Stereo API option on the OpenGL Settings tab, click Additional OpenGL Properties to open the OpenGL Stereo tab (Figure 9.10)." on page 104.

• 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 tab, click Additional OpenGL Properties to open the OpenGL Stereo tab (Figure 9.10).

Figure 9.10 OpenGL Stereo Settings

Additional OpenGL Properties	<u>? ×</u>
OpenGL.	
Enable gverlay in OpenGL	
Stereo Display <u>M</u> ode: Use shutter glasses	
Swap eyes (L becomes R, R becomes L)	
Best	ore Defaults
OK Cancel	Apply

- *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 tab. 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 tab (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 tab, 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 tab is shown in Figure 9.11.

Figure 9.11 Direct3D Settings

dditional GeForce4 Ti 4600 P	roperties	? ×
OpenGL Settings Overlay Controls 3D Antialiasing Settings	Desktop Uti Direct3D Settings	lities
Cirect3D		
Performance and Compatibility Options		-8
Display logo when running Direct3D applica	ations	
mipmapping		1
Mipmap detail level: Best image q	uality	*
PCI Texture Memory Size	textures in PCI mode	_
Qustom Direct3D settings:		
Same A	us Delete	
More Direct3D	Eestore Detai	lla
ОК	Cancel 4	soply

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 tab 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 tab (Figure 9.11) to display the More Direct3D tab (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

e Direct3D	
🛠 Direct3D	
xel Alignment	
This allows you to position the and center of the texel.	texel origin between the upper left corner
Value: 3	
Upper Left	Center
	N/
	Bestore Defaults
	OK Cano

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 tab, 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 tab 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
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OpenGL Settings Dverlay 3D Antialiasing Settings	Controls Desktop Utilities
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Ise these control to select the degre lirect3D and OpenGL applications.	e of antialiasing to be used in
Allow applications to control the	antialiasing model
C Manually select the antialiasing	mode
C Off (no antidiasing)	
02/	
O 4x	
	<u>R</u> estore Defaults

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)

ditional Quadro DCC Properties	?
Direct3D Settings Direct3D Settings Overlay Controls 3D Antialiasing Settings	Desktop Utilities DpenGL Settings
Use these control to select the degree of antialiasin Direct3D and OpenGL applications.	g to be used in
C Allow applications to control the antialiasing m	ode
 Manually select the antialiasing mode 	
C Off (no antialiasing)	
C 2x	
Quincunx Antialiasing(tm)	
C 4x	
	Bestore Defaults
οκ ο	
UK	ancel Apply

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

OpenGL Settings	Overlay Contro	
3D Antialiasing	g Settings	Direct3D Settings
©.	#VIDIA	
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e these controls to rect3D and OpenG	select the degree of an L applications.	tialiasing to be used in
 Allow application 	ns to control the antialia	sing mode
Manually select	the antialiasing mode	
C Off (no and	ialiasing)	
@ 2x		
C Quincuns.	Antialiasing(tm)	
C 4x		
C 4xS (Direc	(3D only)	
		Bestore Defaults

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 tab 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 tabs for Windows XP/ 2000/NT 4.0 and Windows 98.

For details on using the Video Mirror controls, see "Video Mirror" on page 83.

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.

3D Antialiasing 9 Direct3D Settings		DpenGL Settings ay Controls Desktop Utilities
E. I		
Irightness:	100%	Enable video overlay zoom Select screen region to zoom
Contrast:	100%	
jue:	0*	
Eaturation:	100%	Zoom control
Γ	<u>V</u> ideo Mirro	Controls <u>R</u> estore Defaults

Figure 9.16 Overlay Controls: Windows XP/2000

3D Antialiasing		Direct3D 1	
OpenGL Settings	Over	ay Controls Des	ktop Utilities
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ightness.	100%	Enable video gveria	
		Select screen region	to zoom
miras:	100%		
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10:	0*		
		Zoom control	
Auration:	100%	Out	- In
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Check here if you	are having pr	oblems with your TV tunes	2
-		£	
	Video Mirro	r Controls Besto	re Defaulis

Figure 9.17 Overlay Controls: Windows 98

PowerMizer Settings (Laptops only)

When using a laptop computer, the NVIDIA PowerMizer tab 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 tab 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 tab 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)

ditional Quadro2 Go Properti	les	2
3D Antialiasing Settings OpenGL Settings Overlay Controls		ngs 'owerMizer
PowerMiz	er settings.	num Imance
Savings		
	<u>Elestore De</u>	etaults
OK	Cancel	Apply

Chapter 9

A P P E N D I X



NVIDIA DUAL-CARD CONFIGURATION

This appendix contains the following major topics:

- "Before You Begin" on page 119
- "Setting Up the Dual NVIDIA Cards" on page 120
- "Enabling the First Card: GeForce3" on page 121
- "Enabling the Second Card: GeForce2 MX" on page 124
- "Accessing Dual Cards & Configurations With QuickTweak" on page 127

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 tabs 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 Display 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** tab.
- 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.

Display Properties
Background Screen Saver Appearance Web Effects Settings
Drag the monitor icons to match the physical arrangement of your monitors.
1 2
Display.
2. (Multiple Monitors) on NVIDIA GeForce2 MX/MX 400
 GK01510232ViewSonic VPD150 on NVIDIA GeForce3 [Multiple Monitors] on NVIDIA GeForce2 MX/MX 400
High Color (16 bit)
1152 by 864 pixels
 Use this device as the primary monitor. Extend my Windows desktop onto this monitor.
OK Cancel Apply

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

8 Go to the next section "Enabling the First Card: GeForce3" on page 121

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 120.
- **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 tab shown in Figure A.4.
- 6 Click the GeForce3 tab to display the GeForce3 tab (Figure A.5).

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

Display Properties
Background Screen Saver Appearance Web Effects Settings
Drag the monitor icons to match the physical arrangement of your monitors.
1 2
<u>D</u> isplay:
1. GK01510232ViewSonic VPD150 on NVIDIA GeForce3
Colors Screen area
High Calar (16 bit)
800 by 600 pixels
Use this device as the primary monitor.
Extend my Windows desktop anto this manitar.
Identify Iroubleshoot Advanced
OK Cancel Apply

Display Properties
Background Screen Saver Appearance Web Effects Settings
Drag the monitor icons to match the physical arrangement of your monitors.
12
Display:
1. GK01510232ViewSonic VPD150 on NVIDIA GeForce3 Colors Screen area
High Color (16 bit) Less Hore B00 by 600 pixels
 Use this device as the primary monitor. Extend my Windows desktop onto this monitor.
Identify Iroubleshoot Advanced
OK Cancel Apply

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

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

(01510232ViewSonic VPD150 and NVIDIA GeForce3 Properties ? >
💁 GeForce3 🛛 💁 Device Selection 👘 💁 Color Correction
General Adapter Monitor Troubleshooting Color Management
Display
Eont Size:
Small Fonts
Normal size (96 dpi)
Compatibility
Some programs operate improperly if you do not restart your computer after you change display settings.
After I change display settings:
C. Restart the computer before applying the new display settings.
Apply the new display settings without restarting.
C Ask me before applying the new display settings.
OK Cancel Apply

GeForce3			Troublesh e Selection		Color M	lanagemen Correction
Display Adapte	rInform	nation —		-		
Graphics Proc	essor:	GeForce3			1 (A. A. A.	
Bus Type:		AGP		1.1		
BIOS Version		3.20.00.0	9			
On-Board Mer	nory:	64 MB			-	
IRQ:		9		- -	nVII	AIG
TV Encoder T	ype:	Conexant	CX25871	SS -		11
System Informa System Proce Total Physical Free Physical	ssor: Memo Memor	iy.		Intel P	2	ll with SSE 61,424 KB 75,356 KB
Driver Version I						
Filename nv4_disp.dl		ription ay driver			/ersion 513.01.12	£0
nv4_mini.sys		ay driver min	inort		5.13.01.12	
nvogint.dl			e client drive		5.13.01.12	
nvcpl.dl	Dispk	y Properties	extension	5	5.13.01.12	50
nvqtwk.dl	Taski	bar utility libr	ary	5	5.13.01.12	50 -
	Ad	ditional <u>P</u> rop	erties	NVIDI	A on the]	nternet >

Figure A.5 NVIDIA GeForce3 Tab

- 7 Click the Additional Properties to display the 3D Antialiasing Settings tab (Figure A.6). From here you can now access all the features & options for the GeForce3 card; see "Additional Features and Enhancements" on page 93.
- Note: 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 127.
- **8** Go to the next section "Enabling the Second Card: GeForce2 MX" on page 124.

	1	1
DpenGL Settings	Overlay Controls	Desktop Utilities
3D Antialiasing	i Settings	Direct3D Settings
ō.	WVIDIA	
	NVIDIA	
	elect the degree of antiali	asing to be used in
ect3D and OpenGL	. applications.	
Allow application	ns to control the antialiasin	o mode
	the antialiasing mode	
C Off (no anti	aliasing)	
C 2x		
C Quincuns A	Antialiasing(tm)	
C 4x		
		Contraction of the
		Restore Defaults
		A CONTRACTOR OF THE OWNER

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 121.
- 2 Return to the Windows Settings tab.
- **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 tab (Figure A.10).

Display Properties
Background Screen Saver Appearance Web Effects Settings
Drag the monitor icons to match the physical arrangement of your monitors.
1 2
Display.
2. (Multiple Monitors) on NVIDIA GeForce2 MX/MX 400
 GK01510232ViewSonic VPD150 on NVIDIA GeForce3 IMultiple Manitors) on NVIDIA GeForce2 MX/MX 400
High Color (16 bit)
1
1152 by 864 pixels
 Use this device as the primary monitor. Extend my Windows desktop onto this monitor.
OK Cancel Apply

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



Display Properties ? 🗙
Background Screen Saver Appearance Web Effects Settings
Drag the monitor icons to match the physical arrangement of your monitors.
1 2
Display.
2. (Multiple Monitors) on NVIDIA GeForce2 MX/MX 400
Colors Screen area High Color (16 bit) Image: Screen area Less 1152 by 864 pixels
 Use this device as the primary monitor. Extend my Windows desktop onto this monitor.
Identify Iroubleshoot Advanced
OK Cancel Apply

Figure A.9	Settings for Dual-Cards	GeForce2 MX on	Windows 2000 (2)
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isplay Properties	21
Background Screen Saver Appear	ance Web Effects Settings
Drag the monitor icons to match the p	hysical arrangement of your monitors.
1	2
J Display: 2. (Multiple Monitors) on NVIDIA Gef	Force2 MX/MX 400
Lolors High Color (16 bit)	Screen area
	1152 by 864 pixels
 Use this device as the primaty mo Extend my Windows desktop onto 	
<u>I</u> dentify	Iroubleshoot Advanced
01	Cancel Apply

Figure A.10 NVIDIA GeForce2 MX Tab

General	Ac	lapter	Monitor		Troublesho	oling
Color Manager	nent	🧐 G	eForce2 MX/I	4X 400	💁 Tw	inView
Display Adapte	r Inform	ation —		-		
Graphics Proc	:essor:	GeForce	2 MX/MX 40		_	
Bus Type:		PCI		1.7		
BIOS Version		3.11.00.3	22			
On-Board Mer	mory:	32 MB		1		
IRQ:		9		1	nVIDI	A
TV Encoder T	ype:	Chrontel	7007		1.1111	
System Informa	tion				AND STREET	
System Proce				Intel P	entium(r) III wi	h SSE
Total Physica		ur				24 KB
	· ····	r				
Free Physical	Memory				174 1	20 KB
Free Physical	1000				174,1	20 K.B
Driver Version I	1000					20 KB
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Driver Version I Filename nv4_disp.dl nv4_mini.sys nvogint.dl	Descri Descri Display Display Open0	ion ption y driver y driver mi iL installa	ble client drive	я <u>6</u>	Version 13.01.1250 13.01.1250 13.01.1250	20 KB
Driver Version I Filename nv4_disp.dll nv4_mini.sys nvogInt.dll nvcpl.dll	Descri Display Display Open0 Display	ion ption y driver y driver mi il. installal y Propertie	ble client drive as extension	2 E	/ersion 13.01.1250 13.01.1250 13.01.1250 13.01.1250	20 KB
Driver Version I Filename nv4_disp.dl nv4_mini.sys nvogint.dl	Descri Display Display Open0 Display	ion ption y driver y driver mi iL installa	ble client drive as extension	я 1	Version 13.01.1250 13.01.1250 13.01.1250	20 KB
Driver Version I Filename nv4_disp.dll nv4_mini.sys nvogInt.dll nvcpl.dll	nformat Descri Display Display OpenO Display Taskb	ion y driver y driver mi iL, installal y Propertie ar utilly lib	ble client drive as extension mary	2	/ersion \$13.01.1250 \$13.01.1250 \$13.01.1250 \$13.01.1250 \$13.01.1250 \$13.01.1250	•
Driver Version I Filename nv4_disp.dll nv4_mini.sys nvogInt.dll nvcpLdll	nformat Descri Display Display OpenO Display Taskb	ion ption y driver y driver mi il. installal y Propertie	ble client drive as extension mary	2	/ersion 13.01.1250 13.01.1250 13.01.1250 13.01.1250	•

8 Click the **Additional Properties** to display the 3D Antialiasing Settings tab (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 127

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

Additional GeForce2 MX/MX 400 Properties	? ×
OpenGL Settings Overlay Controls Desktop Utilitie: 3D Antialiasing Settings Direct3D Settings	
Use these control to select the degree of antialiasing to be used in Direct3D and OpenGL applications.	
 Allow applications to control the antialiasing mode Manually select the antialiasing mode 	
C Off (no antialissing) C 2x	
C 4z	
Restore Defaults	
OK Cancel Appl	7

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 93.

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 tab 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

GeForce2 MX/MX 400	•	
B GeForce3	•	
🚮 Desktop Manager	•	
👼 Adjust Display Propertie	s	
😭 QuickTweak Properties		
About		
(); -	N 🚟 😒	8:27 PM

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

	B GeForce2 MX/MX 400	+
🐁 3D Antialiasing Settings 🔸	deForce3	•
GL Custom OpenGL Settings Custom Direct3D Settings	🚮 Desktop Manager	•
Ustom Color Settings	📓 Adjust Display Properties	
	😭 QuickTweak Properties	
	🙆 About	

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

