



**NV1**<sup>TM</sup>

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WINDOWS 95 MULTIMEDIA ACCELERATOR  
CUSTOMER EVALUATION KIT

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CEK 1.22  
Installation Guide

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***n*VIDIA**

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## CHAPTER 1

*Introduction*

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Welcome to a new dimension in interactive multimedia! The NV1 Windows 95 Multimedia Accelerator delivers an unprecedented interactive experience. This breakthrough product combines real-time photorealistic 3D graphics, video-based special effects, full-motion video acceleration, concurrent high-fidelity wavetable audio, a high-precision digital (and analog) game port and a Sega game pad port. NV1-based products offer advanced arcade-level features that transform the PC into the ultimate multimedia machine.

*About the Documentation*

The *Installation Guide* leads you through installation of the NVidia Customer Evaluation Kit (CEK) software and hardware. First, you'll run the NV1 Advisor program, a DOS-based utility which determines if your system is optimally configured prior to installation. Then, Chapter 3 helps you install the NV1 Windows 95 Multimedia Accelerator Evaluation board and Chapter 4 covers installing and using Windows 95 support software. Chapter 5 details installing and using DOS support software. Exciting demonstration programs are introduced in Chapter 6 and Chapter 7 provides troubleshooting information.

Additional information on features and known problems of the release can

### *Kit Contents*

be found in the companion document, *Release Notes*. Both *Installation Guide* and *Release Notes* are written for a technical audience and are available in hard copy and online. Adobe Acrobat reader for Windows is included on the CEK CD-ROM in the \ACROBAT directory. Run the Acroread executable (*ACROREAD.EXE*) to enable the program.

Please contact NVidia Customer Support ([support@nvidia.com](mailto:support@nvidia.com)) for more information about any portion of the Customer Evaluation Kit.

### ***Kit Contents***

Your Customer Evaluation Kit (CEK) features the following items:

NV1 Windows 95 Multimedia Accelerator Rev E Evaluation Board (ASSY BRD-002-E-XX)

- ROM containing Revision 26 or higher BIOS

- CD-ROM audio cable

- Joystick adapter

- Audio patch cable

- Sega game pad board and cable

The CEK CD-ROM

- Software to support NV1 Evaluation Board

- Demonstration programs

- MIDI sound libraries

- Online documents and Adobe Acrobat reader

NV1 Advisor disk

- NV1 Advisor utility

Documentation

Installation Guide

Release Notes

## *System Requirements*

Minimum Configuration	Recommended Configuration
486-66 DX/2 with PCI bus	90 MHz Pentium-class processor or later, with PCI bus
8 MB system memory	16 MB or more system memory
MS Windows 95	MS Windows 95
Powered speakers or headphones (optional)	Powered speakers or headphones
IBM-compatible joystick (optional)	IBM-compatible joystick Sega(™)-compatible game pad(s)
Sound card (optional)	Sound card



## CHAPTER 2

*Pre-Installing with NV1 Advisor*

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Run the NV1 Advisor **before** installing the NV1 hardware and software. This DOS-based utility safely and quickly checks your system prior to installation to ensure that your system is optimally configured.

*Executing NV1 Advisor*

The NV1 board represents the latest in multimedia technology and is fully compliant with PCI specifications. Some systems need a BIOS update in order to be PCI compliant. The NV1 Advisor checks your system to find potential issues before they are encountered.

The NV1 Advisor utility is executed from the floppy disk. The commands are entered in DOS. Change to the drive designator for your 3.5" floppy drive and run NV1 Advisor (*NVADVISE.EXE*). The NV1 Advisor program is also located on the CEK CD-ROM in the *\DIAGS* directory for the purpose of making a replacement floppy disk.

The NV1 Advisor will check your system. If compliance issues are found, the NV1 Advisor will prompt with a message.

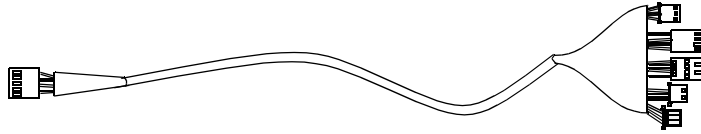


## CHAPTER 3      *Installing NV1 Hardware*

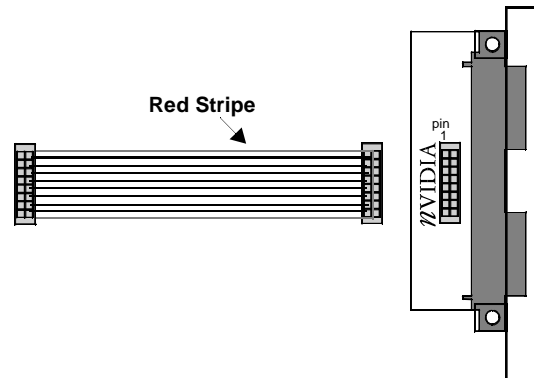
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### ***Installing NV1 Windows 95 Multimedia Accelerator Evaluation Board***

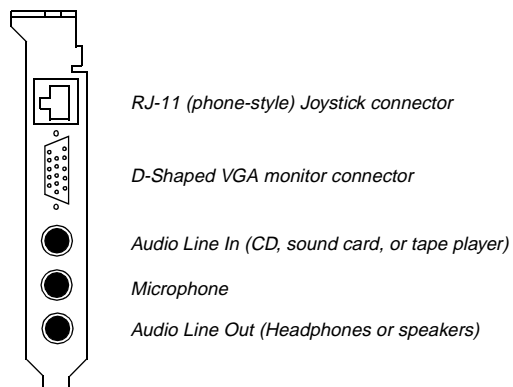
1. Remove any existing graphics board.  
If your system has video on the motherboard, skip to Step 2.
2. Locate an unused PCI bus expansion slot that supports bus mastering; you will use this slot for the NV1 board. Locate an unused ISA slot near the PCI slot; you will use this backpanel space for the Sega game pad board.  
Remove the corresponding expansion slot covers on the computer chassis.
3. Connect the NV1 CD-ROM audio cable.
  - A. Connect the single-connector end of the audio cable to the input connector on the Multimedia Accelerator board.
  - B. The multi-connector end of the audio cable has five connectors for compatibility with a wide variety of CD-ROM drives. Attach the appropriate connector to the output connector on the back of the CD-ROM drive.



4. Attach the Sega game pad board to the NV1 board. Pin 1 on the NV1 board is marked with a small up arrow. See the diagram for pin 1 location on the Sega game pad board.



5. Insert the NV1 board and the Sega game pad board into the appropriate slots. Secure the boards to the chassis.
6. If you are using a sound card in your system, you'll need to pass its output through the NV1 board using the audio patch cable included in the CEK.



## CHAPTER 4

*Installing and Using Windows 95  
Support Software*

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*Installing Windows 95 Support*

This section provides Windows 95 installation procedures for three scenarios: Installing NV1 to a system currently running Windows 95, installing Windows 95 to a system that is currently running NV1, and upgrading NV1 Windows 95 drivers from a previous version. Choose the procedure that is right for you.

## Adding the NV1 board to a Windows 95 system

This procedure assumes you are running Windows 95 with VGA drivers on a third-party video card. An automated installation program for Windows 95 support is not currently available. Display drivers and multimedia drivers are installed manually and must be added in order: display drivers first followed by multimedia drivers.

1. Install the NV1 board. See *"Installing NV1 Hardware"* on page 7.
2. Install the Display Adapter Driver.
  - A. Power on your system. Windows 95 displays a dialog box indicating

"New Hardware Found—A PCI VGA Compatible Display Adapter."

Choose to install drivers from a disk provided by the hardware manufacturer.

B. Type the appropriate path to the CEK CD-ROM.

Drivers are copied to the system directory.

C. Choose **No** when asked to restart the system.

3. Install the Multimedia Device Driver.

A. Windows 95 displays a dialog box indicating "New Hardware Found—A PCI Multimedia Device." Choose to install drivers from a disk provided by the hardware manufacturer.

B. Type the appropriate path to the CEK CD-ROM.

Drivers are copied to the system directory.

C. Choose **Yes** when asked to restart the system.

Some systems experience a long pause after restarting. If you can't run Windows 95 after restarting, see "*System Configuration and Troubleshooting*" on page 23.

4. Change the Resolution.

A. Open **Display Properties**.

(**Start, Settings, Control Panel, Display**)

B. Choose **Settings** and adjust the color palette, desktop area and font size as you wish.

C. Click **OK**. You may be asked to restart Windows for changes to take effect.

## Installing Windows 95 on a system running an NV1 board

This procedure assumes your system is currently running an NV1 board in standard VGA mode and you wish to install Windows 95.

If you are upgrading from Windows 3.x, boot Windows in Safe Mode before beginning the NV1 upgrade procedure—failure to do so could cause your system to crash. See your Windows 95 documentation for information about booting Windows in Safe Mode.

1. Install Windows 95

2. Install the Display Adapter Driver
  - A. Open **Device Manager**.  
(**Start, Settings, Control Panel, System**)
  - B. Double click **Other Devices**.
  - C. Double click **PCI VGA-Compatible Display Adapter**.
  - D. Under the **Driver** tab, click the **Change Driver** button.
  - E. Select **Display Adapters**. Click **OK**.
  - F. Click the **Have Disk** button.
  - G. Type the appropriate path to the CEK CD-ROM.
  - H. Click **OK** to approve **NVidia NV1 VGA-Compatible Device**.
  - I. Click **OK** to approve the **PCI VGA-Compatible Display Adapter** properties page.  
Drivers are copied to the system directory.
  - J. Choose **No** when asked if it is okay to restart the system.
3. Install the Multimedia Device Driver
  - A. From **Device Manager**, double click **Other Devices**.
  - B. Double click **PCI Multimedia device**.
  - C. Under the **Driver** tab, click the **Change Driver** button.
  - D. Select **Sound, Video and Game Controllers**. Click **OK**.
  - E. Click the **Have Disk** button.
  - F. Type the appropriate path to the CEK CD-ROM.
  - G. Click **OK** to approve **NVidia NV1 Multimedia Device**.
  - H. Click **OK** to approve the **PCI Multimedia Device** properties page.
  - I. Drivers are copied to the system directory.
  - J. Choose **Yes** when asked to restart the system.

## Updating NV1 drivers

This procedure assumes you are running NV1 and Windows 95 and want to update your NV1 drivers to the current version. Display drivers and multimedia drivers are installed individually. The MIDI bank file setting should be added or confirmed—see *"Setting the MIDI bank file"* on page 12.

1. Update the Display Adapter driver

- A. Open **Device Manager**.  
(**Start, Settings, Control Panel, System**)
  - B. Double click **Display Adapters**. Double click **NVidia NV1 VGA-Compatible device**.
  - C. Under the **Driver** tab, click the **Change Driver** button.
  - D. Click the **Have Disk** button.
  - E. Type the appropriate path to the CEK CD-ROM.
  - F. Click **OK** to approve **NVidia NV1 VGA-Compatible Device**.
  - G. Click **OK** to approve the **NVidia NV1 VGA-Compatible Adapter** properties page. Drivers are copied to the system directory.
  - H. Choose **No** when asked to restart the system.
2. Update the Multimedia Device driver
    - A. From **Device Manager**, double click **Sound, Video and Game Controllers**.
    - B. Double click **NVidia NV1 Multimedia device**.
    - C. Under the **Driver** tab, click the **Change Driver** button.
    - D. Click the **Have Disk** button.
    - E. Type the appropriate path to the CEK CD-ROM.
    - F. Click **OK** to approve **NVidia NV1 Multimedia Device**.
    - G. Click **OK** to approve the **PCI Multimedia Device** properties page. Drivers are copied to the system directory.
    - H. Choose **Yes** when asked to restart the system.

## *Using the NV1 Board in Windows 95*

### Setting the MIDI bank file

This release provides two MIDI sample sets, or bank (.BNK) files: a 1 MB sample set (NVMIDISM.BNK) that may be used on all systems and a 6 MB sample set (NVMIDILG.BNK) that provides even higher sound quality for systems which have a minimum of 16 MB of main memory. The small MIDI bank file setting is added during the installation procedure. Instructions to

change to the large MIDI bank file setting follow; use only if you have 16 MB or more system memory.

1. Open **Device Manager**.  
(**Start, Settings, Control Panel, System**)
2. Double click **Display Devices**. Double click **Sound, Video and Game Controllers**.
3. Double click **NVidia NV1 Multimedia device**.
4. Under the **Settings** tab, select the MIDI bank file of choice and click OK.
5. Choose **Yes** when asked to restart the system.

### Using the audio quality switch

There is a switch in the [NVidia] section of the *SYSTEM.INI* file to optimize audio quality in your system. The audio switch is "audioquality" and can be set "true" or "false," as follows:

```
[NVIDIA]
AUDIOQUALITY=FALSE
```

Setting audio quality to true provides lower polyphony and higher quality audio, false (default) provides higher polyphony with lesser audio quality. No audioquality setting in your *SYSTEM.INI* is the same as the "false" setting. Be sure to exit and restart Windows after adding the switch for it to take effect.

### Tuning systems with small memory configurations

If you have 8 MB or less in your system and Windows performance is sluggish, we recommend that you change the *SMARTDRV.EXE* line in the DOS file to use only 512K memory for Windows.

```
C:\WINDOWS\SMARTDRV 2048 512
```



## CHAPTER 5

*Installing and Using DOS Support Software*

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Windows 95 provides two methods for running MS-DOS applications: the MS-DOS box and MS-DOS exclusive mode. Windows 95 includes a database (*APPS.INF*) of applications known to be unstable when executed from a DOS box and it polls this database each time it receives a command to execute a DOS program. When Windows 95 encounters an application noted in the database, it issues a message that it will run the application from MS-DOS exclusive mode (also known as MS-DOS mode).

The Windows 95 DOS box functions much like the Windows 3.x DOS box, but has many limitations. A large number of applications do not run well from an MS-DOS box due to performance and memory issues. Also, sound and extended video modes in the DOS box are not currently supported by NVidia. We recommend installing MS-DOS exclusive mode support.

*Installing DOS Support Software*

When switched to MS-DOS mode, Windows 95 removes itself from memory to provide the application maximum use of system resources and runs *DOSSTART.BAT*. NVidia DOS support software must be located on the

hard drive and the *DOSSTART.BAT* file must be configured prior to switching to MS-DOS mode.

Install NVidia DOS support as follows.

1. The NVidia Windows 95 installation procedure does not copy the DOS files from the CEK CD-ROM. You must manually copy the *NV\DOS* and *NV\MIDI* directories from the CEK CD-ROM to the hard drive before using DOS functionality.
2. To configure *DOSSTART.BAT*, add the following lines to the end of the *DOSSTART.BAT* file located in the Windows 95 directory. It is not necessary to restart Windows 95 after editing this file.

```
SET NVMIDI=P330  
SET NVDIR=C:\NV  
SET NVJOY=ON  
C:\NV\DOS\RM.EXE
```

Where

**P330** is the MPU-401 address. Options are **330**, **300**, **230**, or **OFF**. Set to **OFF** to use another MPU-401 device in your system.

**C:\NV** is the full path to the NVidia directory on your hard drive.

NVJOY toggles DOS joystick support. Set **ON** to use the NV1 joystick port. Set to **OFF** use another joystick port in your system.

**C:\NV\DOS** is the full path to the location of the **RM.EXE** file on your hard drive. **RM.EXE** provides support for MPU-401 MIDI, DOS joystick, and extended VGA/SVGA video modes.

### Setting up a custom startup configuration

For even more control over the execution environment of the DOS application, you can set up a custom startup configuration by detailing specific *CONFIG.SYS* and *AUTOEXEC.BAT* settings. If you choose to use this feature, be sure to add the same lines you added to *DOSSTART.BAT* to the end of your custom *AUTOEXEC.BAT*. You also need to place *NVINIT.SYS* in your custom *CONFIG.SYS*.

## ***Using DOS Support Software***

### Setting an application to run in DOS mode

You may want an application to run in DOS mode each time it is executed. This may be required if the application is not present in the Windows 95 database. Change the execution mode for an application as follows.

1. Open **Explorer** and right-click the executable file for the application.
2. Select **Properties**, click the **Program** tab, then click the **Advanced** button.
3. In the **Advanced** dialog box, check **MS-DOS mode**.
4. Click **OK** to exit.

### Shutdown to DOS mode

It is possible to place your system entirely in MS-DOS Mode and run DOS applications from the familiar DOS command line.

1. From the **Start** button, choose **Shutdown**.
2. Check **Restart the computer in MS-DOS mode** and click **Yes**.

The system will execute *DOSSTART.BAT*, then drop to a DOS command line. When finished in DOS, type *EXIT* at the prompt to return to Windows 95.

### Installing and Using the DOS Mixer

The CEK CD-ROM contains a mixer to control the MIDI, CD, and Line In volume of DOS applications in a DOS box or DOS mode. The NVidia Windows 95 installation procedure does not copy the mixer file from the CEK CD-ROM. You must manually copy the file (*MIXER.EXE*) from the *NV\DOS* directory on the CEK CD-ROM to the hard drive before using.

The mixer responds to arrow and tab key commands. To run the DOS mixer, type *MIXER* from the directory on your hard drive that contains the executable file.

Command-line options are also available for controlling mixer settings from

batch files. Type `MIXER /?` from the directory on your hard drive that contains the executable file for a description of the command-line options.

### Using DOS Memory Managers

The PC has evolved substantially in the past 15 years, but the original memory architecture limitation of 640k conventional memory still causes headaches. Memory managers such as Microsoft EMM386 and Quarterdeck QEMM assist in arranging the system memory layout to achieve maximum conventional memory; proper use of these tools can achieve conventional memory totals above 600k.

Since part of the NVidia DOS emulation exists within a software TSR, you need to find space available in conventional memory. The initial size of the DOS emulation software is over 40k (.EXE size) and only drops below 20k after loading. The memory manager must find room for the initial size in upper memory. EMM386 often has problems finding a memory space large enough in upper memory, but QEMM can often find enough room with a good optimization.

The NV1 uses a preset range of system memory above the 640k boundary in order to communicate with the DOS emulation software. This memory window exists within the standard PC Monochrome Display Adapter (MDA) memory space, located within the 32k from B000:0 to B7FF:F. It is important that the memory manager does not attempt to reuse this memory as extra storage, or the system may become unstable and crash. See *"Running a Monochrome Display Adapter"* on page 29.

## CHAPTER 6

*Installing and Using Demonstration Programs*

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Direct applications such as 3-D Viewer are 32-bit Windows applications which use the NV Unified Media Architecture interface to enable hardware features of the Multimedia Accelerator. The following programs are included on the CEK CD-ROM to demonstrate the NV Unified Media Architecture approach to multimedia acceleration.

- 3D Viewer—NV virtual reality simulation, including MIP-mapping
- Shapes—NV quadratic demonstration
- Quad Texture—NV quadratic texture explorer
- Rotate AVI—Video on a curved surface demonstration

*Installing the Demonstration Programs*

Prior to running the demonstration programs and direct applications

- Be sure your display driver is running at 800x600x32K resolution. See Step 4 under *"Installing Windows 95 Support"* on page 9.
- Copy the demonstration programs and direct applications to your local

hard drive. The demonstration programs perform better when run from a hard drive due to the slow access time of CD-ROM.

## *Using the Demonstration Programs*

- Each demonstration program and direct application is run individually from its subdirectory under *NV\DEMOS* on your hard drive; do not run more than one at a time.
- Run the executable file (.EXE) to start each demonstration program.
- Check the **About** dialog box for a summary of function keys.

### 3D Viewer

This program demonstrates how the high-speed quadratic texture mapping of the controller allows rapid, immersive, perspective-corrected, and MIP-mapped presentation of a 3-D environment. 3DVIEW allows real-time navigation around the inside of rooms (attic or chapel). These views were captured as a series of bitmaps "looking" in six directions (up, down, forward, backwards, left, and right). 3DVIEW samples these bitmaps in realtime for a set of quadratic textures to generate the current view of the room. The other two views (factory and checkerboard) are provided to demonstrate perspective correction.

When you open a file, the cursor moves to the center of the window; press and hold the right mouse button and move the mouse to rotate the room up/down or right/left. Window resizing is supported and in/out zoom function is controlled with the **HOME/END** and **PgUp/PgDown** keys. Notice the following:

- As the room is rotated, the parallel lines in the wall surfaces are perspective corrected (lines meet on the imaginary horizon).
- As the view zooms, detail is maintained through on-the-fly MIP-mapping to sample pixels for texels.

## Shapes

This program demonstrates the difference between bilinear and quadratic texture mapping in 3-D modeling. Use the **Options-Shapes** functions to compare the same object in bilinear versus quadratic models. Quadratic Texture Mapping provides a far more realistic rendition using many fewer control points, minimizing the computational load on the CPU.

A bilinear texture has four control points (easy to calculate movement) and is represented with a flat-sided, flat surface without perspective correction. A quadratic texture has nine control points, but the resulting surface can appear curved and perspective-corrected. It has a real-world appearance without requiring hundreds of polygons.

Each object can be moved and rotated with the mouse or automatically using the **Options** menu. The number of control points can be increased in the bilinear model (**Patches** function) to improve the realism, but redraw performance drops due to overhead to calculate additional control points. **Home** and **End** keys will scale the object.

## Quad Texture

This interactive demo lets you adjust the nine control points of a quadratic texture while rotating it and zooming it as with the other demos. Only the nine control points need to be transformed to world coordinates—the texture doesn't change. The source to this program is available in the NV Software Development Kit—contact Customer Support ([support@nvidia.com](mailto:support@nvidia.com)) for more information.

## Rotate AVI

This program demonstrates video warping onto a curved surface. With NVidia's forward texture mapping, the CPU supplies the texture so video is just a texture which changes every frame.

## ***Video Memory Required for Double Buffering***

The following table illustrates minimum on-board video memory necessary to achieve double buffering at each possible resolution. NV1 boards are available with 1, 2, and 4 MB video memory. Please check with NVidia Customer Support if you are uncertain which board you have.

Double buffering is important when running NV1 direct application and demonstration programs.

**Table 1: Video Memory**

	Single Buffer			Double Buffer	
		High Color	True Color	High Color	True Color
Resolution	256 Color	32K Color	16M Color	32K Color	16M Color
640x400	1	1	1	1	2
640x480	1	1	2	2	4
800x600	1	1	2	2	4
1024x768	1	2	4	4	n/a
1152x864	1	2	4	4	n/a
1280x1024	2	4	n/a	n/a	n/a
1600x1200	2	4	n/a	n/a	n/a

## CHAPTER 7

*System Configuration and  
Troubleshooting**Troubleshooting*

Symptom	While running multiple audio files under Windows, it sounds like there are notes that are not being played.
Solution	<p>The performance of the NV1 card is dependent on how well the chipset used in your PCI system can meet the demand of a high performance, bus mastering PCI card. The NV1 card starts "dropping notes" on audio files when the system is unable to keep up with the demands of the application. This is necessary to keep the system from locking up.</p> <p>Be sure that system memory cache (if available) is enabled and the system is set up to maximize its performance. In general, system memory cache (typically 256K) is required for maximum performance.</p>
Symptom	<i>NVINIT.SYS</i> reports, " <b>ERROR: No PCI interrupt detected.</b> "
Solution	During boot-up, your system assigns a PCI interrupt to the NV card which is validated by NVidia's initialization utility. When an invalid interrupt is

### Troubleshooting

assigned, the error message is displayed and the card will not function properly.

The NVidia Multimedia Accelerator card is one of the first PCI graphics-based accelerator cards to utilize interrupts. By definition, PCI systems automatically assign interrupts to PCI devices. If you have early PCI system, you may have to manually ensure that an interrupt is assigned to the slot where the NV1 card is located. Most manufacturers have an Advanced Settings section of the system setup program which allows you to specify the interrupt assigned to the PCI slot.

If all interrupt assignments have been tried and the problem persists, your PCI system probably needs a BIOS upgrade from your system manufacturer as outlined in "*BIOS Compatibility*" on page 27.

#### Symptom

ISA add-in cards, such as SCSI controllers, hang on boot-up after the NVidia Multimedia Accelerator card is installed; boot-up correctly with a different PCI video card installed.

#### Solution

The NVidia Multimedia Accelerator card is one of the first PCI graphics-based accelerator cards to utilize interrupts. By definition, PCI systems automatically assign interrupts to PCI devices. If you have an early PCI system, you may have to manually ensure that the interrupt assigned to the ISA card is not the same interrupt being used by any other card (PCI or ISA). Most manufacturers have an Advanced Settings section of the system setup program which allows you to specify the interrupts assigned to the PCI slot and ISA add-in cards.

If all interrupt assignments have been tried and the problem persists, check with your system manufacturer. It is likely that your system will not support both PCI (level-based ) and ISA (edge-based) interrupts at the same time—you'll need to use *either* PCI add-in cards *or* ISA add-in cards.

#### Symptom

No video or system hangs during initialization screen.

#### Solution

Make sure that the NV1 card is the only video display card installed in your system and you have commented out any other video display drivers in your *CONFIG.SYS*. If this is the case, it is likely that you have an older PCI system which requires a BIOS upgrade from your system the manufacturer, as

outlined in "*BIOS Compatibility*" on page 27.

The BIOS in a Micron system may be assigning the NV1 board an incorrect interrupt; two of the three PCI slots assign interrupt 15 which often "steps on" other devices. Try moving your NV1 board to another PCI slot and rebooting.

If you have a Compaq Presario or Prolinea, please see "*Installing NV1 to Compaq Presario or Prolinea*" on page 29.

## ***PCI System Compatibility***

The NVidia Multimedia Accelerator card is a PCI multi-function card. The first function is *Function 0*—a VGA-compatible controller. The second function is *Function 1*—a Bus Master controller requiring a 32 MB region of memory and the use of interrupts.

The system BIOS and chipset are the two areas of the system responsible for ensuring PCI compatibility. NVidia has encountered several systems in which the system BIOS does not configure a PCI multifunction card correctly. Proper motherboard chipset implementation and use of interrupts has also been an issue.

We have incorporated code to correct these configuration issues, however there may be issues with some early (before mid-April 1994) 486- and Pentium-based PCI machines.

The PCI specification calls for interrupts to be active low, level, and sharable and the NVidia Multimedia Accelerator card requires a PCI Bus Master slot. If possible, ensure that PCI configuration options available under the system setup program are set properly.

Some system setup programs have a PCI Configuration section of the setup utility. The typical choices for interrupt usage are AUTO, LEVEL, or EDGE. The interrupt assigned to the NVidia Multimedia Accelerator card must be level-based rather than edge-based. The default choice by the

### *Chipset Compatibility*

system manufacturer is generally AUTO. If a random system hangs occur, try manually setting the interrupt. When either LEVEL or EDGE is chosen, an interrupt value (typically 9, 10, or 11) must also be assigned to the specific PCI slot or to PCI interrupt INTA.

## ***Chipset Compatibility***

There are several chipset manufacturers who provide PCI chipsets to system manufacturers for use in their systems. Following is a list of chipsets and the potential issues associated with them.

These issues are completely dependent on the specific motherboard implementations using the particular chipset. One system with the chipset may have no problems, while another may exhibit failures.

Chipset	Intel 82434EX (Aries) SiS 85C496/497
Symptom	Performance degradation under Windows, most noticeably with audio, when the built-in IDE controller is being used. (The on-board IDE control lines are multiplexed with the PCI address/data lines, limiting the performance of the PCI bus.)
Solution	Use an IDE controller card in an ISA slot and disable the on-board IDE.
Chipset	Intel 82434FX (Triton-A1 stepping)
Symptom	System hang during Windows 95 initial install. Occurs when upgrading to Windows 95 after the NVidia Multimedia Accelerator card is installed in a system which also uses a PCI Bus Master SCSI controller card. (Problem is associated with the default Standard VGA driver used by Windows 95 and doesn't persist once NVidia's Windows 95 drivers are loaded.)
Solution	Please refer to the <i>Installation Guide</i> for the recommended procedures for upgrading to Windows 95 and installing the NVidia Multimedia Accelerator in a Windows 95 system.

## BIOS Compatibility

NVidia has corrected all known BIOS configuration issues with the exception of the system BIOS and motherboard chipset combinations listed here. BIOS revision information is usually displayed at the top of the initialization screen. Most BIOS manufacturers (including AMI, Phoenix, Award, SystemSoft, Compaq, IBM, Intel, HP) have continually upgraded their BIOSs in an effort to resolve many compatibility issues. Contact your system manufacturer to verify you have the most recent BIOS available for your system.

Motherboard/BIOS	AMI BIOS 12/15/93. Located at the bottom of the initialization screen: 51-0100-00000-00101111- <b>121593</b> -0596822-P
Symptom	No video or system hang initialization screen. The NV1 card is not properly recognized by the system BIOS.
Solution	Upgrade system BIOS.
Motherboard/BIOS	Phoenix BIOS 4.02.
Symptom	No video or system hangs on the initialization screen. The NVcard is not properly recognized by the system BIOS.
Solution	Upgrade system BIOS.
Motherboard/BIOS	Phoenix BIOS 1.03.
Symptom	No PCI interrupt detected by <i>NVINIT.SYS</i> .
Solution	See " <i>Troubleshooting</i> " on page 23.
Motherboard/BIOS	Clone Motherboard, Award 4.50G Modular BIOS 10/8/94.
Chipset	Fugutech Chipset; ALI PCI/ISA Chipset - M1449, M1451.
Symptom	No video. The NV1 card is not properly recognized by the system BIOS.
Solution	Upgrade system BIOS.

### *Checking NV1 Chip Revision Number*

Motherboard/BIOS	ASUS Motherboard (PVI-486SP3 Victoria), Award BIOS 4.50G Modular BIOS.
Chipset	SiS Chipset.
Symptom	The NVidia Multimedia Accelerator is not properly recognized by the system BIOS.
Solution	Upgrade system BIOS.
System/BIOS	AST Bravo MS-T P/133, AST 1.04 BIOS.
Chipset	Sis Chipset.
Symptom	Unable to boot DOS or Windows after installing the NVidia Multimedia Accelerator. Subsequent reboots cause system lock-up.
Solution	Upgrade system BIOS.

### ***Checking NV1 Chip Revision Number***

The CEK CD-ROM contains a program to poll the NV1 chip and return the revision number of the first NV1 board found in the system to your screen.

The NVidia Windows 95 installation procedure does not copy the file from the CEK CD-ROM. You must manually copy the file (*REV\_NUM.EXE*) from the *NV\DIAGS\PCI* directory on the CEK CD-ROM to the hard drive before using.

The program must be executed from MS-DOS Exclusive Mode (see *"Installing DOS Support Software"* on page 15) and will not run if EMM386 is loaded. To run the program, type *REV\_NUM* from the directory on your hard drive that contains the executable file.

## ***Running a Monochrome Display Adapter***

A portion of the DOS 1 MB memory map (B0000-B7FFF) is reserved for MDA (monochrome display adapter) address space. Most systems don't use monochrome screens any more, so this part of the DOS address space is free for other purposes. The NV1 BIOS uses a portion of this space, so you may have to tell memory manager to exclude this region when using NV1.

B02 and later versions of the NV1 chip map in the MDA region to prevent Windows 3.x and Windows 95 VxDs from using the MDA space.

The CEK CD-ROM contains a program that instructs NV1 not to map memory to the initial portion of the MDA space, allowing you to use your monochrome display for monochrome text. Do not use applications that use Hercules Graphics Mode or multiple pages of monochrome display space.

Manually copy the file (*MDA\_OFF.EXE*) from the *NV\DIAGS\PCI* directory on the CEK CD-ROM to the hard drive before using.

Add *MDA\_OFF* to your *AUTOEXEC.BAT* file prior to running Windows. You may also need to add *MODE MONO* and *MODE C080* commands to initialize the MDA immediately following the *MDA-OFF* line.

*Caution: Only run MDA-OFF if you are using a monochrome display adapter.*

## ***Installing NV1 to Compaq Presario or Prolinea***

Following is the Windows installation procedure for Compaq Presario and Prolinea systems using an add-in video card (such as the NV1 card) and not the on-board video. This procedure should be followed only if the standard installation instructions did not work on your Presario or Prolinea.

1. Start in Windows with the NV1 Card Installed
  - A. Insert the NV1 card into an available PCI slot. Do *not* move the video

cable from the on-board connector to the NV1 board until instructed in Step 2.L.

- B. Power on your system and start Windows.
- C. Compaq's Control Center will report a message that a VGA controller has been added—click **OK**. At this point, on-board video is still in use.
- D. A STOP dialog box will notify you that in order for changes to take effect the computer must be restarted. Would you like to restart now? Click **No**.
- 2. Change Video Selection in Compaq Control Center
  - A. Open Compaq group and double click the **Compaq Control Center** icon.
  - B. Choose **Computer Setup, Add-in Devices, PCI Boards**. A list dialog box will appear. The embedded Cirrus VGA compatible controller will be highlighted.
  - C. Click **View, Change**.
  - D. Click **Resources Disabled**, then click **OK** twice.
  - E. A list dialog box will appear. Under the System Options there are three choices. Click **Enable Interrupt Sharing**. An **X** will appear.
  - F. Highlight **VGA Compatible Controller (SGS-Thompson Micro-electronics)** and click **View**.
  - G. Highlight **Logical Device 0: Resources Disabled** and click **Change, Resources Enabled**.
  - H. Click **OK** twice.
  - I. Click **OK** and **Close**. You should be back at the initial Computer Setup screen.
  - J. Choose **File, Save Settings**, and **Exit**.
  - K. A STOP dialog box will notify you that in order for changes to take effect the computer must be restarted. Would you like to restart now? Click **Yes**.
  - L. Power off your system and switch the video cable from the on-board connector to the NV1 VGA card connector. When you power-on, your system will be using the NV1 Windows 95 Multimedia Accelerator card.

## Appendix A. NV1 MIDI Implementation Chart

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	x	1 - 16	
	Messages	x	1 - 16	
Basic Channel	Default	x	Mode 3	
	Messages	x	x	
	Altered	*****	x	
Note Number	True Voice	x *****	0 - 127 0 - 127	
Velocity	Note ON	x	o	
	Note OFF	x	x	
After Touch	Key's	x	o	
	Ch's	x	o	
Pitch Bend		x	o	Default: +/- 2 octaves
Control Change	1	x	o	Modulation wheel
	6,38	x	o	Data entry LSB, MSB
	7	x	o	Volume
	10	x	o	PanPort
	11	x	o	Expression
	64	x	o	Hold Pedal
	100,101	x	o	RPN LSB, MSB
	120	x	o	All sound off
	121	x	o	Reset all controllers
Program Change	True #	x *****	o 0 - 127	Program # 1 - 128
System Exclusive		x	o	

Function		Transmitted	Recognized	Remarks
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune Req.	x	x	
System Real Time	Clock	x	x	
	Commands	x	x	
AUX Messages	Local ON/OFF	x	x	
	All notes OFF	x	o (123-127)	
	Active sensing	x	x	
	System reset	x	x	
Notes		<p>All channels respond to MIDI volume (including drums).  Default power up: Pitch Bend=2 semitones, Master Volume=100  Controller Defaults: Pitch Bend=center, Modulation=off, Expression=127 (max), Hold Pedal=off  RPN supported are Pitch Bend Sensitivity (00h,00h), Master Fine Tuning (00h, 01h), Master Course Tuning (00h, 02h) and RPN reset.</p>		

Mode 1: Omni ON, Poly  
Mode 3: Omni OFF, Poly

Mode 2: Omni ON, Mono  
Mode 4: Omni OFF, Mono

o : YES  
x : NO