



NVIDIA®

Drivers for Windows
***Compressed Modes
User's Guide***

Version 2.0

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COMPRESSED MODES

Overview

About This Document

- The information in this document applies to NVIDIA™ Display Drivers for Windows® NT 4.0, Windows 2000, and Windows XP—Release 40 and later—and explains how to construct a master display mode list using the compressed modes method.
- Revision History

Revision	Date	Description
1.0	3/29/02	Initial Release
1.1	3/29/02	Simplified the Adding Mode Deltas to the INF section.
2.0	8/29/02	Revised to reflect the new compressed mode architecture for Release 40 drivers.

The Purpose of Compressed Modes

Advanced NVIDIA graphics processors and software drivers have greatly increased the number of possible display mode combinations.

Compressed Modes is NVIDIA's method for efficiently specifying any number of desired display modes without having to add huge mode lists to the Windows registry.

Using Compressed Modes

The Compressed Modes Process

The basic steps for constructing a master mode list are as follows:

- 1 For any graphics card, determine which modes you want to make available at which refresh rates.
To simplify the mode delta list, group the modes according to common refresh rates. For example, all modes that are available at refresh rates of 60, 70, and 85 Hz should be grouped together.
- 2 Add the registry key “UseCompressedModeFormat”, DWORD, to the display adapter INF and set to a value of 1.
- 3 Add the list of modes to the “Add registry” section of the adapter INF.
Follow the format given in the section “Creating the Mode Delta List” on page 2.
- 4 Install the driver using the new INF.

Creating the Mode Delta List

Creating the INF Entry

For each graphics card, in the “NVIDIA Add Registry” section of the INF, add the following entry:

```
HKR1,, ValueEntry, %REG_SZ%, "(mode delta group 1);(mode delta group 2); ...;"
```

Where—

- **ValueEntry** = one of NV4_Modes_Delta, NV5_Modes_Delta, NV10_Modes_Delta, etc.
- **mode delta group** = string data for each mode group. See [Understanding the Mode Delta Groups](#) for a detailed description.

1. For Windows NT 4.0 and Windows 2000—

“HKR” in the INF represents the registry key

```
HKEY_LOCAL_MACHINE \SYSTEM\CurrentControlSet\Services\nv4\Device X  
where X is one of 0, 1, 2, 3, ....
```

For Windows XP—

“HKR” in the INF represents the registry key

```
HKEY_LOCAL_MACHINE \SYSTEM\CurrentControlSet\Control\Video\GUID\XXXX  
where the “GUID” stands for an ID string and “XXXX” can be either 0000, 0001, 0002, etc.
```

The exact path represented by “GUID\XXXX” is found in the registry key

```
HKEY_LOCAL_MACHINE\hardware\Devicemap\Video\Device\VideoX,  
where “X” is one of 0, 1, 2, etc. If an NVIDIA card is the first or only card installed, the key is Video0, which is the most common case.
```

Understanding the Mode Delta Groups

Mode delta groups consist of one or more modes, and are separated by a semicolon. Each mode within the mode group consists of one or more of the items shown in Figure 1.1.

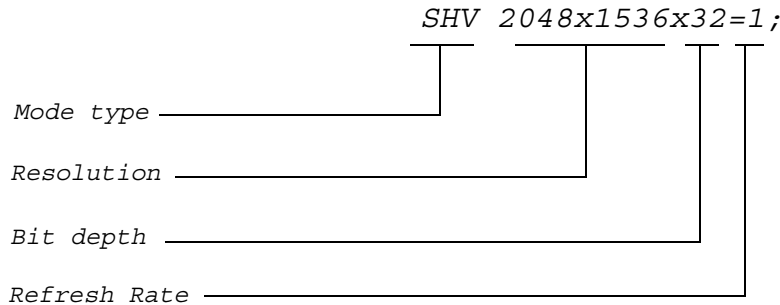


Figure 1.1 Mode Delta Structure

Understanding the Mode Delta Structure

This section describes each item shown in Figure 1.1.

Mode Type

- Specifies whether the modes that follow include standard (S), horizontal spanning (H), or vertical spanning (V) modes.
The mode type applies to all modes that follow, until another mode type is specified.
- Any combination of S, H, or V can be used.

Example: “SH 800x600” specifies resolutions of 800x600 (standard) *and* 1600x600 (horizontal spanning).

Resolution

Format - *Horizontal resolution x vertical resolution*

Bit Depth

- When no bit depth is specified, then all bit depths (8, 16, and 32 bpp) are applied automatically.
- To specify a subset, list the specific bit depths, separated by commas.
Format: “[x8] or [x8, 16] or [x8, 32] or [x16] or [x16, 32] or [x32]”
- The bit depth applies only to the resolution that it follows.

Refresh Rate

- At the end of each mode group, specify the refresh rates to apply to all the modes in the mode group.

Format: “=[refresh rate code];”

- Refresh Rate Code for Standard Refresh Rates:

Specify standard refresh rates using a hexadecimal number, where each bit represents a specific refresh rate as defined in [Figure 1.2](#).

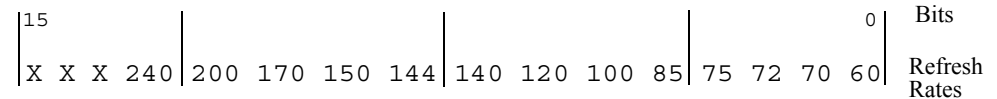


Figure 1.2 Refresh Rate Code Bit Definitions

Example: 1 = 60 Hz; 1DF = 144, 140, 120, 85, 75, 72, 70, and 60 Hz.

- Refresh Rate Code for Custom Refresh Rates

Specify custom refresh rates (those not included in [Figure 1.2](#)) using a four digit hex number in the format 8XXX, where XXX is the hexadecimal representation of the custom refresh rate.

Example: 8014 specifies a custom refresh rate of 20 Hz.

Mode Delta Example

INF Entry

```
HKR,, NV5_Modes_Delta, %REG_SZ%, "S 1024x768=1; 1280x1024x16,32=2B; 1280x1024
1600x1200=8050;SH 1920x2400x32=8014;SHV 800x600=39;"
```

Modes Specified by the INF Entry

The INF entry above adds the following modes and refresh rates for the NV5 graphics card:

Resolution	Bit Depths	Refresh Rates	Comments
800x 600	8/16/32bpp	60Hz, 75Hz, 85Hz, 100Hz	
1024x 768	8/16/32bpp	60Hz	
1280x1024	16/32bpp	60Hz, 70Hz, 75Hz, 100Hz	
1280x1024	8/16/32bpp	80Hz	Custom refresh rate
1600x1200	8/16/32bpp	80Hz	Custom refresh rate
1920x2400	32bpp	20Hz	
1600x 600	8/16/32bpp	60Hz, 75Hz, 85Hz, 100Hz	Horizontal spanning mode
3840x2400	32bpp	20Hz	Horizontal spanning mode
800x1200	8/16/32bpp	60Hz, 75Hz, 85Hz, 100Hz	Vertical spanning mode