



Technical Publications

# Enthusiast Software Troubleshooting Guide

Revision 0.92



# Revision History

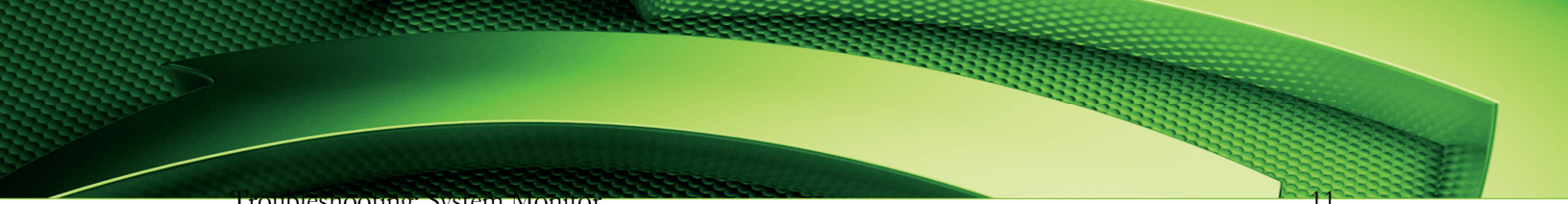
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04/08/2008	0.90	Initial release	D. Hunt
04/08/2008	0.91	Corrected copy command example for ESA FW	D. Hunt
04/08/2008	0.92	<ul style="list-style-type: none"><li>Added a section about Device Rules</li><li>Added more bug filing criteria</li><li>Corrected ESAFlash capabilities</li></ul>	D. Hunt

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# About This Guide

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## What Is the NVIDIA Enthusiast Software Troubleshooting Guide?

This guide may be used to assist in the troubleshooting and clarification of bugs found in the following Enthusiast Software:

- ☐ NVIDIA Control Panel: Performance Group
- ☐ NVIDIA System Monitor
- ☐ NVIDIA System Update
- ☐ Enthusiast System Architecture (ESA) Device Interaction

# Specifications and Tools

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## Recommended Reading

The following specifications and documents will provide a better understanding of the Enthusiast software components and how to troubleshoot issues seen with them.

- Customization Guides
  - **Customization Guide NSM.doc** – references the customization features of the NVIDIA System Monitor
  - **Customization Guide NVCPL\_Perf.doc** – references the customization features of the NVIDIA Control Panel Performance group
  - **Customization Note NVIDIA SysUpdate.doc** – references the customization features of the NVIDIA System Update group
- Developer Documentation
  - **ESA Configuration Tool QS.doc** – a quick start approach to using the tool that modifies/customizes the ESA reference FW to support an ESA device design
  - **ESA Design Guidelines.doc** – provides information about circuit design concerns when using the NVIDIA ESA reference controller and firmware
  - **NVAPI Reference Documentation** – provides details regarding the GPU driver interface
  - **NVIDIA Enthusiast System Architecture.doc** – provides details about the device classes and header implementation for define ESA devices.
  - **NVIDIA External USB Device Specification.doc** – provides HID usage information for ESA device reports.
  - **NVIDIA WPT System BIOS Guide.doc** – provides details of the WPT interface which is used by the SBIOS to provide specific information to the NVIDIA Control Panel Performance group, NVIDIA System Monitor, and NVIDIA Control Panel System Update group.
  - **WinWptTest Utility.doc** – a quick start approach to using the WinWptTest utility to troubleshoot WPT interface issues.





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## Troubleshooting Tools

The following tools may be helpful when looking at issues with the Enthusiast software applications or the ESA firmware.

- ☐ **ESAFIash** – used to update the ESA FW on an NVIDIA ESA reference FW device.
- ☐ **NVAPISWAK** – provides details regarding the GPU driver interface and is useful in troubleshooting GPU interface and monitoring issues.
- ☐ **Performance tech support log** – selected from the Performance System Information page. This provides details about the CPU/Memory/and chipset HW.
- ☐ **SimpleHIDWrite** (<http://www.lvr.com/hidpage.htm>) – used to determine what HID information is being passed to the apps from the ESA device.
- ☐ **SWAK** – provides system HW/SW configuration details.
- ☐ **WinWptTest** – used to troubleshoot SBIOS WPT interface issues and validate/checksum nvsuoem.ini files.

# Filing a Bug

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## Configuration Details

The following hardware details should be provided when filing bugs.

- ☐ Motherboard P/N and manufacturer
- ☐ nForce chipset (if applicable)
- ☐ GPU P/N and manufacturer
- ☐ CPU Vendor, type, and speed
- ☐ Memory Vendor, type, speed, and amount/config
- ☐ ESA device P/N and manufacturer (if applicable)
- ☐ Flash device P/N and manufacturer (if applicable)
- ☐ Any additional devices added to the system

The following software details (if applicable) should be provided when filing bugs.

- ☐ NVIDIA Control Panel: Performance group version
- ☐ NVIDIA System Monitor version
- ☐ NVIDIA System Update version
- ☐ GPU driver version
- ☐ SBIOS version
- ☐ ESA FW version
- ☐ OS type (32/64), language, version, and if UAC enable/disabled (if Vista)
- ☐ nForce driver versions
- ☐ NVIDIA Control Panel Client version
- ☐ SWAK log (any NVIDIA GPU related issues)
- ☐ NVAPISWAK log (any NVIDIA GPU related issues)
- ☐ WinWptTest log (Any Performance, Monitor, or System Update issues)
- ☐ SimpleHID log (any ESA device issues)
- ☐ Tech support log from Performance (Any Performance or Monitor issues)
- ☐ The failing profile file (if applicable)
- ☐ ESA Device PRJ file (if applicable)



## Bug Modules

The following bug modules should be used when reporting issues.

- ☐ Enthusiast Software issues
  - Application – nForce- System Monitor
  - NVIDIA Control Panel – Performance
  - NVIDIA Control Panel – System Update
- ☐ Install issues
  - Setup - nForce - System Monitor
  - Setup - nForce - Performance
  - Setup - nForce - System Update
- ☐ ESA Firmware issues
  - Firmware - nForce - ESA
  - Firmware - nForce - ESA Vendor
- ☐ ESA Tool issues
  - Tools - nForce - NVESACFG

# Troubleshooting: Performance

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## CPU Device Settings

### Clock Controls

The clock control directly accesses system PLLs and makes adjustments to the M/N ration of those PLLs. Due to the association of this clock and the memory clock, the dynamic range of changes made under the OS is less than that of the SBIOS.

**Note:** If hang issues with certain frequencies are noted, it may be an issue with the BKVs in the SBIOS or some other memory timing setting. Please make sure the latest version of the NVIDIA NVMM code is included in the SBIOS build.

### Voltage Controls

The voltage controls are exposed to Performance via the WPT interface from the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 16H: GET CPU VOLTAGE](#)
- [SUB-FUNCTION CODE 17H: SET CPU VOLTAGE](#)
- [SUB-FUNCTION CODE 2BH: GET CPU GTL VREF VOLTAGE](#)
- [SUB-FUNCTION CODE 2CH: SET CPU GTL VREF VOLTAGE](#)

Minimum, maximum, and step information are passed via the INI table included in the build of Performance (nvsuoem.ini) or defined in an embedded table in the SBIOS.

Refer to the Customization Guide NVCPL\_Perf:

- [BIOS INTEGRATION OF THE INI FILE](#)
- [VOLTAGE SETTINGS](#)

**Note:** Definition for the GTLRef voltages is derived directly from the WPT interface and do not have entries in the nvsuoem.ini file/table.

## Fan Controls

The fan controls are exposed to Performance via the WPT interface from the SBIOS. Also, the minimum and maximum allowable cooling settings are defined by the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 02H: GET CPU FAN SPEED](#)
- [SUB-FUNCTION CODE 03H: GET CPU FAN POWER](#)
- [SUB-FUNCTION CODE 04H: SET CPU FAN POWER](#)

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## GPU Device Settings

All GPU device setting controls are exposed to Performance via the NVAPI. Performance also uses this interface to set values. Many issues seen with the GPU device settings may actually be GPU driver related; therefore, SWAK and NVAPISWAK logs should be taken to isolate these issues.

**Note:** Not all listed controls will be present on all GPUs. Consult the NVIDIA GPU PM with questions about specific support.

## Clock Controls

Refer to the NVAPI Reference Documentation:

- [GPU CLOCK CONTROL INTERFACE](#)

**Note:** When in SLI mode the clocks for the GPUs will be adjusted at the same time using the same settings. The individual cards cannot be adjusted independently.

**Note:** The overclocked value set is added as the topmost value of the GPU driver performance table and may only be in use when that level is required by graphics load.

## Voltage Controls

Refer to the NVAPI Reference Documentation:

- [POWERMIZER APIs](#)

## Fan Controls

Refer to the NVAPI Reference Documentation:

- [GPU COOLER INTERFACE](#)



# Memory Device Settings

## Voltage Controls

The voltage controls are exposed to Performance via the WPT interface from the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 1Ch: GET MEMORY VOLTAGE](#)
- [SUB-FUNCTION CODE 1Dh: SET MEMORY VOLTAGE](#)

Minimum, maximum, and step information are passed via the INI table included in the build of Performance (nvsuoem.ini) or defined in an embedded table in the SBIOS.

Refer to the Customization Guide NVCPL\_Perf:

- [BIOS INTEGRATION OF THE INI FILE](#)
- [VOLTAGE SETTINGS](#)

# Motherboard Device Settings

## Clock Controls

The clock control directly accesses system PLLs and makes adjustments to the M/N ration of those PLLs.

**Note:** If hang issues with certain frequencies are noted, it may be an issue with the BKVs in the SBIOS or some other memory timing setting. Please make sure the latest version of the NVIDIA NVMM code is included in the SBIOS build.

## Voltage Controls

The voltage controls are exposed to Performance via the WPT interface from the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 18h: GET MCP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 19h: SET MCP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 1Ah: GET PCI-E/SPP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 1Bh: SET PCI-E/SPP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 1Ch: GET MEMORY VOLTAGE](#)
- [SUB-FUNCTION CODE 1Dh: SET MEMORY VOLTAGE](#)
- [SUB-FUNCTION CODE 1Eh: GET AUXILIARY VOLTAGE](#)
- [SUB-FUNCTION CODE 1Fh: SET AUXILIARY VOLTAGE](#)
- [SUB-FUNCTION CODE 20h: GET CPU HT LINK/FSB VOLTAGE](#)

- [SUB-FUNCTION CODE 21H: SET CPU HT LINK/FSB VOLTAGE](#)
- [SUB-FUNCTION CODE 22H: GET SPP TO MCP VOLTAGE](#)
- [SUB-FUNCTION CODE 23H: SET SPP TO MCP VOLTAGE](#)

**Note:** Do not use the Precise Voltage function unless supported by the HW. This will result in faulty readings of other voltage controls and may cause them to be disabled.

- [SUB-FUNCTION CODE 24H: GET ACTUAL VOLTAGE READING](#)

Minimum, maximum, and step information are passed via the INI table included in the build of Performance (nvsuoem.ini) or defined in an embedded table in the SBIOS.

Refer to the Customization Guide NVCPL\_Perf:

- [BIOS INTEGRATION OF THE INI FILE](#)
- [VOLTAGE SETTINGS](#)

## Fan Controls

The fan controls are exposed to Performance via the WPT interface from the SBIOS. Also, the minimum and maximum allowable cooling settings are defined by the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 06H: GET SYSTEM FAN SPEED](#)
- [SUB-FUNCTION CODE 07H: GET SYSTEM FAN POWER](#)
- [SUB-FUNCTION CODE 08H: SET SYSTEM FAN POWER](#)
- [SUB-FUNCTION CODE 05H: GET nFORCE FAN SPEED](#)
- [SUB-FUNCTION CODE 09H: GET nFORCE FAN POWER](#)
- [SUB-FUNCTION CODE 0AH: SET nFORCE FAN POWER](#)
- [SUB-FUNCTION CODE 0BH: GET AUX1 FAN SPEED](#)
- [SUB-FUNCTION CODE 0CH: GET AUX1 FAN POWER](#)
- [SUB-FUNCTION CODE 0DH: SET AUX1 FAN POWER](#)
- [SUB-FUNCTION CODE 28H: GET AUX2 FAN SPEED](#)
- [SUB-FUNCTION CODE 29H: GET AUX2 FAN POWER](#)
- [SUB-FUNCTION CODE 2AH: SET AUX2 FAN POWER](#)

It is possible to change the label name for the Aux1 and Aux2 fans.

Refer to the Customization Guide NVCPL\_Perf:

- [CHANGING AUXILIARY FAN LABEL](#)

## ESA Device Settings

The controls for various ESA device classes are determined by the information sent up through the HID reports.

Refer to the NVIDIA External USB Device Specification.

## Dynamic BIOS Access

The Dynamic BIOS Access page (DBA) is created purely by the nvsuoem.ini file or table embedded in the SBIOS.

The SBIOS is responsible for the name labels, values, CMOS token references, and lock-out definitions.

Refer to the Customization Guide NVCPL\_Perf:

- [BIOS FIELDS](#)

It may be necessary to recalculate the CMOS checksum after a change is made. The SBIOS must add support for this in the WPT interface.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 26H: RECALCULATE CMOS CHECKSUM](#)

**Note:** Changes made in the DBA page are not dynamic and require a reboot to become valid.

## Device Rules

Device rule settings are stored in profiles. Loading a different profile will change the device rule settings loaded. Five data points are taken from the curve in the device rule to generate the data points used to set the control element.

When a profile is running which has device rules, nTuneService will look at those data points generated from the device rule and set the element appropriately. The device rules are always running.

When trouble shooting, it may be helpful to disable any Device Rules to make sure these are not affecting the issue. You can do this by editing the profile in question and setting the "RuleEnable" value for all device rules equal to 0. The "Device Rules" will typically appear at the bottom of the profile.

# Troubleshooting: System Monitor

## Device Carousel Issues

The device carousel presented by the NVIDIA System Monitor is an OpenGL 3D interface and requires the GPU adaptor be capable of that support. During transition to the carousel, the system may go through a mode change to meet the 32bpp color depth requirement.

### User Interface

The carousel is populated with devices detected during initialization. Missing devices may indicate an issue with the detection mechanism.

Device	Detection Mechanism
CPU	OS API and direct read of CPU MSR
GPU	NVIDIA GPU only Uses GPU driver NVAPI <b>Note:</b> Model will differ for SLI vs. non-SLI
HDD	SMART on primary HDD
Memory	EPP, OS API, and JEDEC
Motherboard	WPT
Networking	NVIDIA controller only OS API
ESA Chassis	HID
ESA Power Supply	HID
ESA Water Cooler	HID

If the models for the carousel or other objects have been customized, the necessary guidelines must be followed.

Refer to the Customization Guide NSM:

- [CAROUSEL OBJECTS](#)

# Monitor Issues

## Data Collection: CPU

### Voltages

The voltage readings are exposed to Performance via the WPT interface from the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 16H: GET CPU VOLTAGE](#)
- [SUB-FUNCTION CODE 2BH: GET CPU GTL VREF VOLTAGE](#)

### Fan Speeds

The fan speeds are read via the WPT interface from the SBIOS.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 02H: GET CPU FAN SPEED](#)

### Temperatures

The CPU temperatures may be read in two different ways depending upon which is supported.

#### Junction Temperature

If the CPU supports reporting the junction temperature through a MSR or PECI interface, this value will be displayed as the CPU T<sub>j</sub> temperature.

#### Case Temperature

If the CPU does not support reporting of the junction temperature, the SBIOS will need to report the case temperature through the WPT interface, which will be displayed as the CPU T<sub>c</sub> temperature.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 12H: GET CPU TEMPERATURE](#)
- [SUB-FUNCTION CODE 14H: GET 2<sup>ND</sup> CPU TEMPERATURE](#)

**Note:** A 2<sup>nd</sup> CPU is defined a physically separate CPU, not two CPUs on the same die.



## Data Collection: GPU Devices

Monitoring information for GPU devices comes from the GPU driver NVAPI. Many issues seen with the GPU device settings may actually be GPU driver related; therefore, SWAK and NVAPISWAK logs should be taken to isolate these issues.

**Note:** Not all listed controls will be present on all GPUs. Consult the NVIDIA GPU PM with questions about specific support.

### Bus Speeds

Refer to the NVAPI Reference Documentation:

- [GPU CLOCK CONTROL INTERFACE](#)

**Note:** The Bus speeds reported will be the current speed value, which may not be the max performance value set by the user.

### Voltages

Refer to the NVAPI Reference Documentation:

- [POWERMIZER APIS](#)

### Fan Speeds

Refer to the NVAPI Reference Documentation:

- [GPU COOLER INTERFACE](#)

### Temperatures

Refer to the NVAPI Reference Documentation:

- [GPU COOLER INTERFACE](#)

## Data Collection: nForce Motherboard and Memory Devices

### Bus Speeds

Bus speeds come from reading the chipset PLL registers directly.

### Voltages

Voltages for motherboard rails are retrieved through the WPT interface.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 18H: GET MCP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 1AH: GET PCI-E/SPP CORE VOLTAGE](#)
- [SUB-FUNCTION CODE 1CH: GET MEMORY VOLTAGE](#)
- [SUB-FUNCTION CODE 1EH: GET AUXILIARY VOLTAGE](#)
- [SUB-FUNCTION CODE 20H: GET CPU HT LINK/FSB VOLTAGE](#)
- [SUB-FUNCTION CODE 22H: GET SPP TO MCP VOLTAGE](#)

### Fan Speeds

Fan speeds for motherboard are retrieved through the WPT interface.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 06H: GET SYSTEM FAN SPEED](#)
- [SUB-FUNCTION CODE 05H: GET nFORCE FAN SPEED](#)
- [SUB-FUNCTION CODE 0BH: GET AUX1 FAN SPEED](#)
- [SUB-FUNCTION CODE 28H: GET AUX2 FAN SPEED](#)

### Temperatures

Temperatures for motherboard sensors are retrieved through the WPT interface.

**Note:** For the nForce chipset temperatures, the information is taken from registers in the actual chip.

**Note:** Memory temperatures may be reported through the JEDEC or EPP interfaces

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 13H: GET SYSTEM TEMPERATURE](#)
- [SUB-FUNCTION CODE 15H: GET NON-ESA POWER SUPPLY TEMPERATURE](#)

## Data Collection: ESA Devices

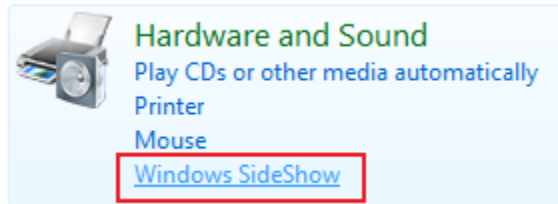
The data collected for various ESA device classes are determined by the information sent up through the HID reports.

Refer to the NVIDIA External USB Device Specification.

## Sideshow Output

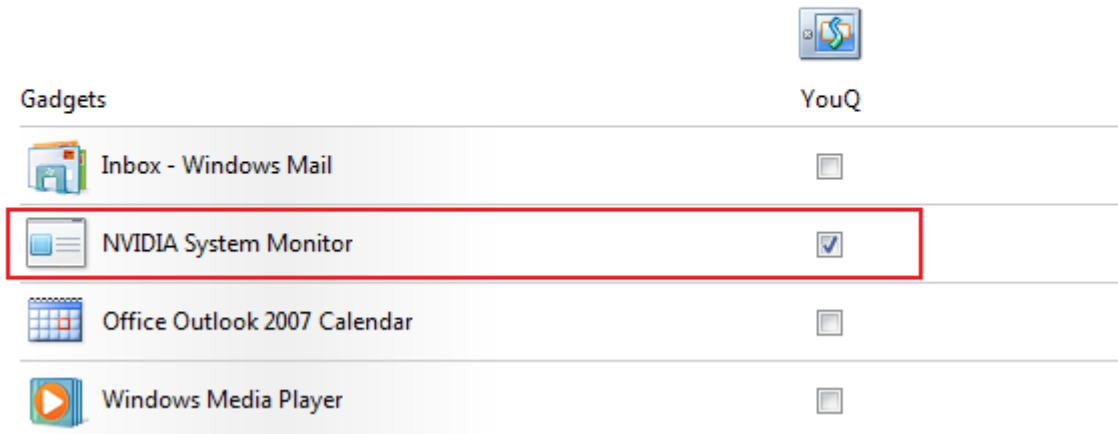
### Enabling in Windows™ Control Panel

Before the sideshow device will be available for use by the System Monitor, it must be enabled as a Sideshow device in the Windows™ Control Panel.



### Select which gadgets appear on your Windows SideShow-compatible devices

You can change settings for some gadgets by clicking the gadget name in the list. To change device settings, click the device name in the left pane.



If this does not appear, there may be an issue with the sideshow device, or the installer may not have included the proper registry entry for the device. Please check the registry for this entry:

[HKEY\_CURRENT\_USER\Software\Microsoft\SideShow\Gadgets\E050D413-99C7-4223-B6E6-F438BB268FBA]

"OnlineOnly"=dword:00000001

"Endpoints"=hex(7):7b,00,41,00,39,00,41,00,35,00,33,00,35,00,33,00,46,00,2d,00,32,00,44,00,34,00,42,00,2d,00,34,00,37,00,63,00,65,00,2d,00,39,00,33,00,45,00,45,00,2d,00,37,00,35,00,39,00,46,00,33,00,41,00,37,00,44,00,44,00,41,00,34,00,46,00,7d,00,00,00,00,00

"Icon"=hex(2):25,00,50,00,72,00,6f,00,67,00,72,00,61,00,6d,00,46,00,69,00,6c,00,65,00,73,00,25,00,5c,00,4d,00,69,00,63,00,72,00,6f,00,73,00,6f,00,66,00,74,00,20,00,53,00,44,00,4b,00,73,00,5c,00,57,00,69,00,6e,00,64,00,6f,00,77,00,73,00,5c,00,76,00,36,00,2e,00,30,00,5c,00,53,00,61,00,6d,00,70,00,6c,00,65,00,73,00,5c,00,57,00,69,00,6e,00,55,00,49,00,5c,00,53,00,69,00,64,00,65,00,53,00,68,00,6f,00,77,00,5c,00,50,00,69,00,63,00,74,00,75,00,72,00,65,00,73,00,5c,00,57,00,69,00,6e,00,64,00,6f,00,77,00,73,00,53,00,69,00,64,00,65,00,53,00,68,00,6f,00,77,00,50,00,69,00,63,00,74,00,75,00,72,00,65,00,73,00,2e,00,65,00,78,00,65,00,2c,00,2d,00,31,00,30,00,30,00,00,00

"FriendlyName"=hex(2):4e,00,76,00,4d,00,6f,00,6e,00,69,00,74,00,6f,00,72,00,20,00,53,00,69,00,64,00,65,00,53,00,68,00,6f,00,77,00,20,00,49,00,6e,00,74,00,65,00,72,00,66,00,61,00,63,00,65,00,20,00,54,00,65,00,73,00,74,00,00,00

# Troubleshooting: System Update

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## System BIOS Flash Issues

### Flash ID Mechanism

Before allowing a flash, System Update will validate the correct ROM is being used by comparing the BIOS ID in the ROM image to that reported by the SBIOS through the WPT interface.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 27H: READ SBIOS INFORMATION](#)

**Note:** Information about the SBIOS such as date, version, and vendor ID are also reported through the above interface.

### Flash Support

The SBIOS and board design must provide support for update of the SBIOS ROM by System Update. The BIOS update will only work for circuit designs that have the BIOS ROM on the MCP LPC bus or SPI bus (following the base NVIDIA reference design).

Write access and bootblock control must be given through the WPT interface.

Refer to the NVIDIA WPT System BIOS Guide:

- [SUB-FUNCTION CODE 0EH: ENABLE BOOTBLOCK WRITE](#)
- [SUB-FUNCTION CODE 0FH: DISABLE BOOTBLOCK WRITE](#)
- [SUB-FUNCTION CODE 0EH: ENABLE FLASH ACCESS](#)
- [SUB-FUNCTION CODE 0FH: DISABLE FLASH ACCESS](#)

**Note:** Consult with the NVIDIA SW PM regarding which flash parts are supported.

# ESA Firmware Update Issues

## Firmware ID Mechanism

To avoid programming incorrect firmware in an incorrect ESA device System Update will verify the Device ID matches that which is reported through the HID report.

Refer to the NVIDIA Enthusiast System Architecture document

Refer to the NVIDIA External USB Device Specification document

## Firmware Update support

To avoid potential image issue while flashing, the following should be done when creating the image.

Refer to the ESA Configuration Tool QS guide

Refer to the ESA Design Guidelines document

## Initial Programming

The microcontroller's flash comes from the manufacture erased. The first flash must be done using the SiLab IDE or flash tool, Keil IDE, or ROM burner. All three areas must be flashed. Combine the files from a command prompt using:

```
COPY EsaFw.hex+EsaFwCfg.hex+EsaFlash.hex Esa.hex
```

The file that should be flashed is "Esa.hex".

## Subsequent Flashes

After the initial flash, the flash can be updated with NVIDIA supplied EsaFlash or through System Update. The EsaFlash portion of the FW should never need updated again.

The ESA FW and ESA configuration file can be combined from a command prompt using:

```
COPY EsaFwCfg.hex+EsaFw.hex Esa.hex
```





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# Driver Update Issues

## nForce Driver Updates

System Update scans the PCI config space to gather the Vendor and Device IDs of the nForce chipset components. It uses this information to determine which chipset is onboard.

It then checks the registry to determine which nForce package has been installed.

If issues are seen, it is possible that the chipset is not yet defined on the NVIDIA web server, or that this registry key is not populated:

`HKEY_LOCAL_MACHINE\SOFTWARE\NVIDIA Corporation\nForcePackageVersion`

**Note:** Please contact the SW PM if this registry is missing or to verify a chipset has been added to the NVIDIA device matrix.

## GPU Driver Updates

System Update scans the registry or uses NVAPI to gather the Vendor and Device IDs of the GPU. It also uses this mechanism to get the GPU driver version.

If issues are seen, it is possible that the chipset is not yet defined on the NVIDIA web server.

**Note:** Please contact the SW PM to verify the GPU has been added to the NVIDIA device matrix.

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