NVAPI Public SDK for Driver Release 555

Release Notes

June 2024

Table of Contents

NVAPI Release Notes

Introduction

NVAPI is NVIDIA Corporation's core software development kit that allows direct access to NVIDIA GPUs and drivers on all Windows platforms. NVAPI provides support for categories of operations that range beyond the scope of those found in familiar graphics APIs such as DirectX and OpenGL.

The following files are provided by NVIDIA:

- `nvapi.h`
- `nvapi_lite_common.h`
- `nvapi_lite_d3dext.h`
- `nvapi_lite_salend.h`
- `nvapi_lite_salstart.h`
- `nvapi_lite_sli.h`
- `nvapi_lite_stereo.h`
- `nvapi_lite_surround.h`
- `NvApiDriverSettings.c`
- `NvApiDriverSettings.h`
- `nvHLSLExtns.h`
- `nvHLSLExtnsInternal.h`
- `nvShaderExtnEnums.h`
- `\x86\nvapi.lib`
- `\amd64\nvapi64.lib`
- `\docs\NVAPI_Reference_Developer.chm`
- `\docs\NVAPI_SDKs_Samples_and_Tools_License_Agreement(Public).pdf`

These release notes describe the new features, enhancements, and changes in the NVAPI SDK for this release.

New Features and Enhancements

New APIs for GPU Handle Enumeration

The following two new APIs are introduced for GPU handle enumeration:

- `NvAPI_SYS_GetPhysicalGPUs`
- `NvAPI_SYS_GetLogicalGPUs`

These two APIs will replace the existing APIs: `NvAPI_EnumPhysicalGPUs`, `NvAPI_EnumTCCPhysicalGPUs`, and `NvAPI_EnumLogicalGPUs`.

The following table shows the API usage in detail.

Adapter Type / Driver Mode	Existing API	New API
WDDM[1]	`NvAPI_EnumPhysicalGPUs`	`NvAPI_SYS_GetPhysicalGPUs`
TCC[2]	`NvAPI_EnumTCCPhysicalGPUs`	`NvAPI_SYS_GetPhysicalGPUs`
MCDM[3]	None	`NvAPI_SYS_GetPhysicalGPUs`
WDDM Logical GPUs	`NvAPI_EnumLogicalGPUs`	`NvAPI_SYS_GetLogicalGPUs`
MCDM Logical GPUs	None	`NvAPI_SYS_GetLogicalGPus`

1 = Windows Display Driver Model
2 = Tesla Compute Cluster
3 = Microsoft Compute Driver Model

We recommend that you switch to the new APIs because they provide a single interface to enumerate the handles for different adapter types (GPU driver modes). In the future, the old GPU handle enumeration APIs might be marked as deprecated.

Sample Code for the New APIs

The following SDK folder contains the sample code that illustrates the new API calls:

- `R555-developer\Sample_Code\GPUHandleEnumeration\gpuHandleEnumeration.c`

NVAPI Support for Microsoft Compute Driver Model (MCDM)

- Starting with R555 SDK release, NVAPI is adding support for NVIDIA GPUs in MCDM mode. Any user application that wants to enumerate the GPU handles for MCDM mode GPUs must use the new GPU handle enumeration APIs described in the previous section.
- A new tag is introduced in the header file: `MCDM_SUPPORTED`. APIs containing this tag in the description are expected to work on MCDM GPUs.

Changes in NVAPI for Driver Release 555

New Functions

- Added `NvAPI_SYS_GetPhysicalGPUs`
- Added `NvAPI_SYS_GetLogicalGPUs`

New/Updated Structures

- Added `rsvd0` to `NV_LATENCY_MARKER_PARAMS_V1`
- Added `NV_ASYNC_FRAME_MARKER_PARAMS_V1`
- Added `NV_PHYSICAL_GPU_HANDLE_DATA`
- Added `NV_PHYSICAL_GPUS_V1`
- Added `NV_LOGICAL_GPU_HANDLE_DATA`
- Added `NV_LOGICAL_GPUS_V1`

New/Updated Enums

- Added `OUT_OF_BAND_IGNORE` to `NV_OUT_OF_BAND_CQ_TYPE`
- Added `NV_ADAPTER_TYPE`

New/Updated Unions

- None

New Macros

- None

New Errors

- None

TCC Support

- None

MCDM Support

- Added `NvAPI_GetPhysicalGPUFromGPUID`
- Added `NvAPI_GetGPUIDfromPhysicalGPU`

- Added `NvAPI_GPU_GetShaderSubPipeCount`
- Added `NvAPI_GPU_GetGpuCoreCount`
- Added `NvAPI_GPU_GetSystemType`
- Added `NvAPI_GPU_GetFullName`
- Added `NvAPI_GPU_GetPCIIdentifiers`
- Added `NvAPI_GPU_GetGPUType`
- Added `NvAPI_GPU_GetBusType`
- Added `NvAPI_GPU_GetBusId`
- Added `NvAPI_GPU_GetBusSlotId`
- Added `NvAPI_GPU_GetIRQ`
- Added `NvAPI_GPU_GetVbiosRevision`
- Added `NvAPI_GPU_GetVbiosOEMRevision`
- Added `NvAPI_GPU_GetVbiosVersionString`
- Added `NvAPI_GPU_GetCurrentPCIEDownstreamWidth`
- Added `NvAPI_GPU_GetPhysicalFrameBufferSize`
- Added `NvAPI_GPU_GetVirtualFrameBufferSize`
- Added `NvAPI_GPU_GetBoardInfo`
- Added `NvAPI_GPU_GetRamBusWidth`
- Added `NvAPI_GPU_GetArchInfo`
- Added `NvAPI_GPU_GetHDCPSupportStatus`
- Added `NvAPI_GPU_GetTachReading`
- Added `NvAPI_GPU_GetECCStatusInfo`
- Added `NvAPI_GPU_GetECCErrorInfo`
- Added `NvAPI_GPU_ResetECCErrorInfo`
- Added `NvAPI_GPU_GetECCConfigurationInfo`
- Added `NvAPI_GPU_SetECCConfiguration`
- Added `NvAPI_GPU_GetVirtualizationInfo`
- Added `NvAPI_GPU_GetLicensableFeatures`
- Added `NvAPI_GPU_GetGPUInfo`
- Added `NvAPI_GPU_GetVRReadyData`
- Added `NvAPI_GPU_GetGspFeatures`
- Added `NvAPI_GPU_GetPstates20`
- Added `NvAPI_GPU_GetCurrentPstate`
- Added `NvAPI_GPU_GetDynamicPstatesInfoEx`
- Added `NvAPI_GPU_GetThermalSettings`
- Added `NvAPI_GPU_GetAllClockFrequencies`
- Added `NvAPI_GPU_QueryIlluminationSupport`
- Added `NvAPI_GPU_GetIllumination`

- Added `NvAPI_GPU_SetIllumination`
- Added `NvAPI_GPU_ClientIllumDevicesGetInfo`
- Added `NvAPI_GPU_ClientIllumDevicesGetControl`
- Added `NvAPI_GPU_ClientIllumDevicesSetControl`
- Added `NvAPI_GPU_ClientIllumZonesGetInfo`
- Added `NvAPI_GPU_ClientIllumZonesGetControl`
- Added `NvAPI_GPU_ClientIllumZonesSetControl`
- Added `NvAPI_SYS_GetPhysicalGPUs`
- Added `NvAPI_SYS_GetLogicalGPUs`
- Added `NvAPI_GPU_GetMemoryInfoEx`

Deprecated NVAPI Functions

- None

NVAPIDriverSettings Additions/Removals

- Removed `WKS_MEMORY_ALLOCATION_POLICY_ID`

HLSL Extension Additions/Removals

- None

NVAPI Security Information

User administrator privilege is required to access certain driver features per NVIDIA's overall security vision. This helps mitigate the impact of malware.

Each API requiring administrator access, will return an `NVAPI_INVALID_USER_PRIVILEGE` error, when run with standard user privilege.

The application will require Administrator privileges to access this API, which can be elevated to a higher permission level by selecting "Run as Administrator" in Admin approval mode.

About the Sample Code

Sample code is provided with the SDK package that demonstrates the following features:

- Custom Timing
- Display Color Control

- Display Configuration
- GPU Handle Enumeration
- I2C
- QSYNC Event Registration
- Sync Configuration

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