



# **NVAPI Public SDK for Driver Release 545**

Release Notes

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# NVAPI Release Notes

## Introduction

NVAPI is NVIDIA'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 changes made in the NVAPI SDK for this release.

# Changes in NVAPI for Driver Release 545

## New Functions

- > Added `NvAPI_GPU_NVLINK_GetCaps`
- > Added `NvAPI_GPU_NVLINK_GetStatus`
- > Added `NvAPI_GPU_GetGPUInfo`
- > Added `NvAPI_DISP_GetEdidData`
- > Added `NvAPI_D3D12_EnableRaytracingValidation`
- > Added `NvAPI_D3D12_RegisterRaytracingValidationMessageCallback`
- > Added `NvAPI_D3D12_UnregisterRaytracingValidationMessageCallback`
- > Added `NvAPI_D3D12_FlushRaytracingValidationMessages`

## New/Updated Structures

- > Added `NVLINK_GET_CAPS_V1`
- > Added `NVLINK_DEVICE_INFO_V1`
- > Added `NVLINK_LINK_STATUS_INFO_V1`
- > Added `NVLINK_LINK_STATUS_INFO_V2`
- > Added `NVLINK_GET_STATUS_V1`
- > Added `NVLINK_GET_STATUS_V2`
- > Added `NV_GPU_INFO_V1`
- > Added `NV_GPU_INFO_V2`
- > Added `NV_EDID_DATA_V1`
- > Added `NV_EDID_DATA_V2`

## New/Updated Enums

- > Added `NV_EDID_FLAG`
- > Added `NVAPI_NVLINK_DEVICE_INFO_DEVICE_TYPE`
- > Added `NVAPI_NVLINK_STATUS_LINK_STATE`
- > Added `NVAPI_NVLINK_STATUS_SUBLINK_RX_STATE`
- > Added `NVAPI_NVLINK_STATUS_SUBLINK_TX_STATE`
- > Added `NVAPI_D3D12_RAYTRACING_VALIDATION_FLAGS`
- > Added `NVAPI_D3D12_RAYTRACING_VALIDATION_MESSAGE_SEVERITY`

## New/Updated Unions

- > None

## New Macros

- > Added NV\_EDID\_DATA\_SIZE\_MAX
- > Added NVAPI\_NVLINK\_COUNTER\_MAX\_TYPES
- > Added NVAPI\_NVLINK\_MAX\_LINKS
- > Added NVAPI\_NVLINK\_CAPS\_SUPPORTED
- > Added NVAPI\_NVLINK\_CAPS\_P2P\_SUPPORTED
- > Added NVAPI\_NVLINK\_CAPS\_SYSMEM\_ACCESS
- > Added NVAPI\_NVLINK\_CAPS\_P2P\_ATOMICS
- > Added NVAPI\_NVLINK\_CAPS\_SYSMEM\_ATOMICS
- > Added NVAPI\_NVLINK\_CAPS\_PEX\_TUNNELING
- > Added NVAPI\_NVLINK\_CAPS\_SLI\_BRIDGE
- > Added NVAPI\_NVLINK\_CAPS\_SLI\_BRIDGE\_SENSABLE
- > Added NVAPI\_NVLINK\_CAPS\_POWER\_STATE\_L0
- > Added NVAPI\_NVLINK\_CAPS\_POWER\_STATE\_L1
- > Added NVAPI\_NVLINK\_CAPS\_POWER\_STATE\_L2
- > Added NVAPI\_NVLINK\_CAPS\_POWER\_STATE\_L3
- > Added NVAPI\_NVLINK\_CAPS\_VALID
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_1\_0
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_2\_0
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_1\_0
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_2\_0
- > Added NVAPI\_NVLINK\_DEVICE\_INFO\_DEVICE\_ID\_FLAGS\_NONE
- > Added NVAPI\_NVLINK\_DEVICE\_INFO\_DEVICE\_ID\_FLAGS\_PCI
- > Added NVAPI\_NVLINK\_DEVICE\_INFO\_DEVICE\_ID\_FLAGS\_UUID
- > Added NVAPI\_NVLINK\_STATUS\_PHY\_NVHS
- > Added NVAPI\_NVLINK\_STATUS\_PHY\_GRS
- > Added NVAPI\_NVLINK\_STATUS\_PHY\_INVALID
- > Added NVAPI\_NVLINK\_STATUS\_NVLINK\_VERSION\_1\_0
- > Added NVAPI\_NVLINK\_STATUS\_NVLINK\_VERSION\_2\_0
- > Added NVAPI\_NVLINK\_STATUS\_NVLINK\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_STATUS\_NCI\_VERSION\_1\_0
- > Added NVAPI\_NVLINK\_STATUS\_NCI\_VERSION\_2\_0
- > Added NVAPI\_NVLINK\_STATUS\_NCI\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_STATUS\_NVHS\_VERSION\_1\_0
- > Added NVAPI\_NVLINK\_STATUS\_NVHS\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_STATUS\_GRS\_VERSION\_1\_0

- > Added NVAPI\_NVLINK\_STATUS\_GRS\_VERSION\_INVALID
- > Added NVAPI\_NVLINK\_STATUS\_CONNECTED\_TRUE
- > Added NVAPI\_NVLINK\_STATUS\_CONNECTED\_FALSE
- > Added NVAPI\_NVLINK\_STATUS\_LOOP\_PROPERTY\_LOOPBACK
- > Added NVAPI\_NVLINK\_STATUS\_LOOP\_PROPERTY\_LOOPOUT
- > Added NVAPI\_NVLINK\_STATUS\_LOOP\_PROPERTY\_NONE
- > Added NVAPI\_NVLINK\_STATUS\_REMOTE\_LINK\_NUMBER\_INVALID
- > Added NVAPI\_NVLINK\_REFCLK\_TYPE\_INVALID
- > Added NVAPI\_NVLINK\_REFCLK\_TYPE\_NVHS
- > Added NVAPI\_NVLINK\_REFCLK\_TYPE\_PEX

## New Errors

- > None

## TCC Support

- > None

## Deprecated NVAPI Functions

- > None

## NVAPIDriverSettings Additions/Removals

- > Removed enum value PS\_SHADERDISKCACHE\_FLAGS\_BACKEND\_GFN\_DLL from EValues\_PS\_SHADERDISKCACHE\_FLAGS
- > Added enum value PS\_SHADERDISKCACHE\_FLAGS\_BACKEND\_DLL to EValues\_PS\_SHADERDISKCACHE\_FLAGS
- > Added enum value PS\_SHADERDISKCACHE\_FLAGS\_ALL\_BUILDS\_MISMATCH\_TEST to EValues\_PS\_SHADERDISKCACHE\_FLAGS

## 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 a `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.

The following APIs now require Administrator privileges:

- > `NvAPI_GSync_SetSyncStateSettings`
- > `NvAPI_GSync_SetControlParameters`

## About the Sample Code

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

- > Custom Timing
- > Display Color Control
- > Display Configuration
- > I2C
- > QSYNC Event Registration
- > Sync Configuration

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