



# **NVAPI Open Source SDK for Driver Release 565**

Release Notes

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# NVAPI Release Notes

## Introduction

NVAPI is NVIDIA Corporation's core software development kit that allows 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.

This release contains a version of `nvapi.h`, provided under MIT license, to enable open-source re-implementations of NVAPI for Windows emulation environments.

For those interested in developing applications using the NVAPI Developer SDK on Windows, NVIDIA recommends using the NVAPI Developer SDK, which is available at <https://developer.nvidia.com/nvapi>.

The following files are provided by NVIDIA:

> `nvapi.h`

Starting with release 560, this file is split into the following files, which contain the interface constants, structure definitions, and function prototypes for the NVAPI interface.

- o `nvapi.h`
- o `nvapi_lite_common.h`
- o `nvapi_lite_d3dext.h`
- o `nvapi_lite_salend.h`
- o `nvapi_lite_salstart.h`
- o `nvapi_lite_sli.h`
- o `nvapi_lite_stereo.h`
- o `nvapi_lite_surround.h`

> `nvapi_interface.h`

This file is a reference for mapping the NVAPI identifiers to functions.

> `NvApiDriverSettings.h`

> `NvApiDriverSettings.c`

These files are used to query and change driver settings. For more information, see the [NVIDIA Driver Settings Programming Guide](#).

> `nvHLSLExtns.h`

- > nvHLSLExtnsInternal.h
- > nvShaderExtnEnums.h

These release notes describe the changes made in the NVAPI Open Source Interface for this release.

## NVAPI Runtime

The NVAPI runtime (NVAPI DLL) provides the following key functions:

- > `nvapi_QueryInterface()`:

Maps a 32-bit identifier to a function pointer.

```
void *nvapi_QueryInterface(NvU32 id);
```

The NVAPI application will call `nvapi_QueryInterface()` to get individual NVAPI function pointers from NVAPI DLL.

Refer to `nvapi_interface.h` for a mapping of identifiers to NVAPI function names.

- > `NvAPI_Initialize()`:

```
NvAPI_Status __cdecl NvAPI_Initialize()
{
    return NVAPI_OK;
}
```

- > `NvAPI_Unload()`:

```
NvAPI_Status __cdecl NvAPI_Unload()
{
    return NVAPI_OK;
}
```

## Changes in NVAPI for Driver Release 565

### New Functions

- > Added `NvAPI_D3D11_SetAsyncFrameMarker`

### New/Updated Structures

- > None

### New Macros

- > Added `NvAPI_NVLINK_CAPS_NVLINK_VERSION_2_2`

- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_3\_0
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_3\_1
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_4\_0
- > Added NVAPI\_NVLINK\_CAPS\_NVLINK\_VERSION\_5\_0
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_2\_2
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_3\_0
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_3\_1
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_4\_0
- > Added NVAPI\_NVLINK\_CAPS\_NCI\_VERSION\_5\_0

## New Errors

- > None

## TCC Support

- > None

## MCDM Support

- > None

## Deprecated NVAPI Functions

- > None

## NVAPIDriverSettings Additions/Removals

- > Added SHIM\_RENDERING\_OPTIONS\_ALLOW\_DYNAMIC\_DISPLAY\_MUX\_SWITCH\_MDM
- > Added SHIM\_RENDERING\_OPTIONS\_DISALLOW\_DYNAMIC\_DISPLAY\_MUX\_SWITCH\_MDM

## HLSL Extensions

The following header files are provided to expose intrinsic functions that are not present in the HLSL instruction set. For more information, see [Unlocking GPU Intrinsic in HLSL](#).

- > nvShaderExtnEnums.h

This header file contains all the shader extension opcodes. The application should call `NvAPI_D3D12_IsNvShaderExtnOpCodeSupported()` or `NvAPI_D3D11_IsNvShaderExtnOpCodeSupported()` to check for support for these NV shader extension opcodes.

- > nvHLSLExtns.h

This header file needs to be included in the application HLSL shader code to use the NVIDIA shader extensions.

> `nvHLSLExtnsInternal.h`

This file contains internal functions that are not to be called by the application directly.

## 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.

The following API requires administrator privileges:

> `NvAPI_GPU_SetEDID`

## Sample Code

The SDK package contains the `Sample_Code` directory, which provides code examples for the following features:

Feature	Sample Code Subdirectory	Sample Code
Custom timing	CustomTiming	CustomTiming.cpp
Display color control	DisplayColorControl	> DisplayColorControl.cpp > NVHelper.cpp > NVHelper.h
Display configuration	DisplayConfiguration	> DisplayConfiguration.cpp > targetver.h
GPU handle enumeration	GPUHandleEnumeration	gpuHandleEnumeration.c
QSYNCEvent registration	QSYNCEventRegistration	QSYNCEventRegistration.cpp

Sync configuration	Sync_Configuration	<ul style="list-style-type: none"> <li>&gt; Sync_Configuration.cpp</li> <li>&gt; targetver.h</li> </ul>
I2C	i2c	<ul style="list-style-type: none"> <li>&gt; i2c.cpp</li> <li>&gt; targetver.h</li> </ul>

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