



cuDLA API

API Reference Manual

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Chapter 1. Modules

Here is a list of all modules:

- ▶ [Data types used by cuDLA driver](#)
- ▶ [cuDLA API](#)

1.1. Data types used by cuDLA driver

union cudlaDevAttribute

struct cudlaExternalMemoryHandleDesc_t

struct cudlaExternalSemaphoreHandleDesc_t

struct CudlaFence

union cudlaModuleAttribute

struct cudlaModuleTensorDescriptor

struct cudlaSignalEvents

struct cudlaTask

struct cudlaWaitEvents

enum cudlaAccessPermissionFlags

Access permission flags for importing NvSciBuffers

Values

CUDLA_READ_WRITE_PERM = 0

Flag to import memory with read-write permission

CUDLA_READ_ONLY_PERM = 1

Flag to import memory with read-only permission

CUDLA_TASK_STATISTICS = 1<<1

Flag to indicate buffer as layerwise statistics buffer.

enum cudlaDevAttributeType

Device attribute type.

Values

CUDLA_UNIFIED_ADDRESSING = 0

Flag to check for support for UVA.

CUDLA_DEVICE_VERSION = 1

Flag to check for DLA HW version.

enum cudlaFenceType

Supported fence types.

Values

CUDLA_NVSCISYNC_FENCE = 1

NvSciSync fence type for EOF.

CUDLA_NVSCISYNC_FENCE_SOF = 2

enum cudlaMode

Device creation modes.

Values

CUDLA_CUDA_DLA = 0

Hyrbid mode.

CUDLA_STANDALONE = 1

Standalone mode.

enum cudlaModuleAttributeType

Module attribute types.

Values

CUDLA_NUM_INPUT_TENSORS = 0

Flag to retrieve number of input tensors.

CUDLA_NUM_OUTPUT_TENSORS = 1

Flag to retrieve number of output tensors.

CUDLA_INPUT_TENSOR_DESCRIPTOR = 2

Flag to retrieve all the input tensor descriptors.

CUDLA_OUTPUT_TENSOR_DESCRIPTOR = 3

Flag to retrieve all the output tensor descriptors.

CUDLA_NUM_OUTPUT_TASK_STATISTICS = 4

Flag to retrieve total number of output task statistics buffer.

CUDLA_OUTPUT_TASK_STATISTICS_DESCRIPTOR = 5

Flag to retrieve all the output task statistics descriptors.

enum cudlaModuleLoadFlags

Module load flags for [cudlaModuleLoadFromMemory](#).

Values

CUDLA_MODULE_DEFAULT = 0

Default flag.

CUDLA_MODULE_ENABLE_FAULT_DIAGNOSTICS = 1

Flag to load a module that is used to perform permanent fault diagnostics for DLA HW.

enum cudlaNvSciSyncAttributes

cuDLA NvSciSync attributes.

Values

CUDLA_NVSCISYNC_ATTR_WAIT = 1

Wait attribute.

CUDLA_NVSCISYNC_ATTR_SIGNAL = 2

Signal attribute.

enum cudlaStatus

Error codes.

Values

cudlaSuccess = 0

The API call returned with no errors.

cudlaErrorInvalidParam = 1

This indicates that one or more parameters passed to the API is/are incorrect.

cudlaErrorOutOfResources = 2

This indicates that the API call failed due to lack of underlying resources.

cudlaErrorCreationFailed = 3

This indicates that an internal error occurred during creation of device handle.

cudlaErrorInvalidAddress = 4

This indicates that the memory object being passed in the API call has not been registered before.

cudlaErrorOs = 5

This indicates that an OS error occurred.

cudlaErrorCuda = 6

This indicates that there was an error in a CUDA operation as part of the API call.

cudlaErrorUmd = 7

This indicates that there was an error in the DLA runtime for the API call.

cudlaErrorInvalidDevice = 8

This indicates that the device handle passed to the API call is invalid.

cudlaErrorInvalidAttribute = 9

This indicates that an invalid attribute is being requested.

cudlaErrorIncompatibleDlaSWVersion = 10

This indicates that the underlying DLA runtime is incompatible with the current cuDLA version.

cudlaErrorMemoryRegistered = 11

This indicates that the memory object is already registered.

cudlaErrorInvalidModule = 12

This indicates that the module being passed is invalid.

cudlaErrorUnsupportedOperation = 13

This indicates that the operation being requested by the API call is unsupported.

cudlaErrorNvSci = 14

This indicates that the NvSci operation requested by the API call failed.

cudlaErrorDlaErrInvalidInput = 0x40000001

DLA HW Error.

cudlaErrorDlaErrInvalidPreAction = 0x40000002

DLA HW Error.

cudlaErrorDlaErrNoMem = 0x40000003

DLA HW Error.

cudlaErrorDlaErrProcessorBusy = 0x40000004

DLA HW Error.

cudlaErrorDlaErrTaskStatusMismatch = 0x40000005

DLA HW Error.

cudlaErrorDlaErrEngineTimeout = 0x40000006

DLA HW Error.

cudlaErrorDlaErrDataMismatch = 0x40000007

DLA HW Error.

cudlaErrorUnknown = 0x7fffffff

This indicates that an unknown error has occurred.

enum cudlaSubmissionFlags

Task submission flags for [cudlaSubmitTask](#).

Values

CUDLA_SUBMIT_NOOP = 1

Flag to specify that the submitted task must be bypassed for execution.

CUDLA_SUBMIT_SKIP_LOCK_ACQUIRE = 1<<1

Flag to specify that the global lock acquire must be skipped.

CUDLA_SUBMIT_DIAGNOSTICS_TASK = 1<<2

Flag to specify that the submitted task is to run permanent fault diagnostics for DLA HW.

typedef cudlaDevHandle_t *cudlaDevHandle

cuDLA Device Handle

`typedef cudlaModule_t *cudlaModule`

cuDLA Module Handle

1.2. Modules

Here is a list of all modules:

- ▶ [Data types used by cuDLA driver](#)
- ▶ [cuDLA API](#)

1.1. Data types used by cuDLA driver

`union cudlaDevAttribute`

`struct cudlaExternalMemoryHandleDesc_t`

`struct cudlaExternalSemaphoreHandleDesc_t`

`struct CudlaFence`

`union cudlaModuleAttribute`

`struct cudlaModuleTensorDescriptor`

`struct cudlaSignalEvents`

`struct cudlaTask`

`struct cudlaWaitEvents`

`enum cudlaAccessPermissionFlags`

Access permission flags for importing NvSciBuffers

Values

CUDLA_READ_WRITE_PERM = 0

Flag to import memory with read-write permission

CUDLA_READ_ONLY_PERM = 1

Flag to import memory with read-only permission
CUDLA_TASK_STATISTICS = 1<<1
Flag to indicate buffer as layerwise statistics buffer.

enum cudlaDevAttributeType

Device attribute type.

Values

CUDLA_UNIFIED_ADDRESSING = 0
Flag to check for support for UVA.
CUDLA_DEVICE_VERSION = 1
Flag to check for DLA HW version.

enum cudlaFenceType

Supported fence types.

Values

CUDLA_NVSCISYNC_FENCE = 1
NvSciSync fence type for EOF.
CUDLA_NVSCISYNC_FENCE_SOF = 2

enum cudlaMode

Device creation modes.

Values

CUDLA_CUDA_DLA = 0
Hyrbid mode.
CUDLA_STANDALONE = 1
Standalone mode.

enum cudlaModuleAttributeType

Module attribute types.

Values

CUDLA_NUM_INPUT_TENSORS = 0
Flag to retrieve number of input tensors.
CUDLA_NUM_OUTPUT_TENSORS = 1
Flag to retrieve number of output tensors.
CUDLA_INPUT_TENSOR_DESCRIPTORS = 2
Flag to retrieve all the input tensor descriptors.

CUDLA_OUTPUT_TENSOR_DESCRIPTOR = 3

Flag to retrieve all the output tensor descriptors.

CUDLA_NUM_OUTPUT_TASK_STATISTICS = 4

Flag to retrieve total number of output task statistics buffer.

CUDLA_OUTPUT_TASK_STATISTICS_DESCRIPTOR = 5

Flag to retrieve all the output task statistics descriptors.

enum cudlaModuleLoadFlags

Module load flags for [cudlaModuleLoadFromMemory](#).

Values**CUDLA_MODULE_DEFAULT = 0**

Default flag.

CUDLA_MODULE_ENABLE_FAULT_DIAGNOSTICS = 1

Flag to load a module that is used to perform permanent fault diagnostics for DLA HW.

enum cudlaNvSciSyncAttributes

cuDLA NvSciSync attributes.

Values**CUDLA_NVSCISYNC_ATTR_WAIT = 1**

Wait attribute.

CUDLA_NVSCISYNC_ATTR_SIGNAL = 2

Signal attribute.

enum cudlaStatus

Error codes.

Values**cudlaSuccess = 0**

The API call returned with no errors.

cudlaErrorInvalidParam = 1

This indicates that one or more parameters passed to the API is/are incorrect.

cudlaErrorOutOfResources = 2

This indicates that the API call failed due to lack of underlying resources.

cudlaErrorCreationFailed = 3

This indicates that an internal error occurred during creation of device handle.

cudlaErrorInvalidAddress = 4

This indicates that the memory object being passed in the API call has not been registered before.

cudlaErrorOs = 5

This indicates that an OS error occurred.

cudlaErrorCuda = 6

This indicates that there was an error in a CUDA operation as part of the API call.

cudlaErrorUmd = 7

This indicates that there was an error in the DLA runtime for the API call.

cudlaErrorInvalidDevice = 8

This indicates that the device handle passed to the API call is invalid.

cudlaErrorInvalidAttribute = 9

This indicates that an invalid attribute is being requested.

cudlaErrorIncompatibleDlaSWVersion = 10

This indicates that the underlying DLA runtime is incompatible with the current cuDLA version.

cudlaErrorMemoryRegistered = 11

This indicates that the memory object is already registered.

cudlaErrorInvalidModule = 12

This indicates that the module being passed is invalid.

cudlaErrorUnsupportedOperation = 13

This indicates that the operation being requested by the API call is unsupported.

cudlaErrorNvSci = 14

This indicates that the NvSci operation requested by the API call failed.

cudlaErrorDlaErrInvalidInput = 0x40000001

DLA HW Error.

cudlaErrorDlaErrInvalidPreAction = 0x40000002

DLA HW Error.

cudlaErrorDlaErrNoMem = 0x40000003

DLA HW Error.

cudlaErrorDlaErrProcessorBusy = 0x40000004

DLA HW Error.

cudlaErrorDlaErrTaskStatusMismatch = 0x40000005

DLA HW Error.

cudlaErrorDlaErrEngineTimeout = 0x40000006

DLA HW Error.

cudlaErrorDlaErrDataMismatch = 0x40000007

DLA HW Error.

cudlaErrorUnknown = 0x7fffffff

This indicates that an unknown error has occurred.

enum cudlaSubmissionFlags

Task submission flags for [cudlaSubmitTask](#).

Values

CUDLA_SUBMIT_NOOP = 1

Flag to specify that the submitted task must be bypassed for execution.

CUDLA_SUBMIT_SKIP_LOCK_ACQUIRE = 1<<1

Flag to specify that the global lock acquire must be skipped.

CUDLA_SUBMIT_DIAGNOSTICS_TASK = 1<<2

Flag to specify that the submitted task is to run permanent fault diagnostics for DLA HW.

typedef cudlaDevHandle_t *cudlaDevHandle

cuDLA Device Handle

typedef cudlaModule_t *cudlaModule

cuDLA Module Handle

Chapter 2. Data Structures

Here are the data structures with brief descriptions:

[cudlaDevAttribute](#)

[cudlaExternalMemoryHandleDesc](#)

[cudlaExternalSemaphoreHandleDesc](#)

[CudlaFence](#)

[cudlaModuleAttribute](#)

[cudlaModuleTensorDescriptor](#)

[cudlaSignalEvents](#)

[cudlaTask](#)

[cudlaWaitEvents](#)

2.1. cudlaDevAttribute Union Reference

Device attribute.

`uint32_t cudlaDevAttribute::deviceVersion`

DLA device version. Xavier has 1.0 and Orin has 2.0.

`uint8_t cudlaDevAttribute::unifiedAddressingSupported`

Returns 0 if unified addressing is not supported.

2.2. cudlaExternalMemoryHandleDesc_t Struct Reference

External memory handle descriptor.

```
const void  
*cudlaExternalMemoryHandleDesc_t::extBufObject
```

A handle representing an external memory object.

```
unsigned long long  
cudlaExternalMemoryHandleDesc_t::size
```

Size of the memory allocation

2.3. cudlaExternalSemaphoreHandleDesc_t Struct Reference

External semaphore handle descriptor.

```
const void  
*cudlaExternalSemaphoreHandleDesc_t::extSyncObject
```

A handle representing an external synchronization object.

2.4. CudlaFence Struct Reference

Fence description.

```
void *CudlaFence::fence
```

Fence.

```
cudlaFenceType CudlaFence::type
```

Fence type.

2.5. cudlaModuleAttribute Union Reference

Module attribute.

cudlaModuleTensorDescriptor
***cudlaModuleAttribute::inputTensorDesc**

Returns an array of input tensor descriptors.

uint32_t cudlaModuleAttribute::numInputTensors

Returns the number of input tensors.

uint32_t cudlaModuleAttribute::numOutputTensors

Returns the number of output tensors.

cudlaModuleTensorDescriptor
***cudlaModuleAttribute::outputTensorDesc**

Returns an array of output tensor descriptors.

2.6. cudlaModuleTensorDescriptor Struct Reference

Tensor descriptor.

2.7. cudlaSignalEvents Struct Reference

Signal events for [cudlaSubmitTask](#)

const **cudlaSignalEvents::devPtrs

Array of registered synchronization objects (via [cudlaImportExternalSemaphore](#)).

CudlaFence *cudlaSignalEvents::eofFences

Array of fences pointers for all the signal events corresponding to the synchronization objects.

uint32_t cudlaSignalEvents::numEvents

Total number of signal events.

2.8. cudlaTask Struct Reference

Structure of Task.

`const **cudlaTask::inputTensor`

Array of input tensors.

`cudlaModule cudlaTask::moduleHandle`

cuDLA module handle.

`uint32_t cudlaTask::numInputTensors`

Number of input tensors.

`uint32_t cudlaTask::numOutputTensors`

Number of output tensors.

`const **cudlaTask::outputTensor`

Array of output tensors.

`cudlaSignalEvents *cudlaTask::signalEvents`

Signal events.

`const cudlaWaitEvents *cudlaTask::waitEvents`

Wait events.

2.9. cudlaWaitEvents Struct Reference

Wait events for [cudlaSubmitTask](#).

`uint32_t cudlaWaitEvents::numEvents`

Total number of wait events.

```
const CudlaFence *cudlaWaitEvents::preFences
```

Array of fence pointers for all the wait events.

Chapter 3. Data Fields

Here is a list of all documented struct and union fields with links to the struct/union documentation for each field:

deviceVersion

[cudlaDevAttribute](#)

devPtrs

[cudlaSignalEvents](#)

eoffFences

[cudlaSignalEvents](#)

extBufObject

[cudlaExternalMemoryHandleDesc](#)

extSyncObject

[cudlaExternalSemaphoreHandleDesc](#)

fence

[CudlaFence](#)

inputTensor

[cudlaTask](#)

inputTensorDesc

[cudlaModuleAttribute](#)

moduleHandle

[cudlaTask](#)

numEvents

[cudlaWaitEvents](#)

[cudlaSignalEvents](#)

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[cudlaTask](#)

[cudlaModuleAttribute](#)

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