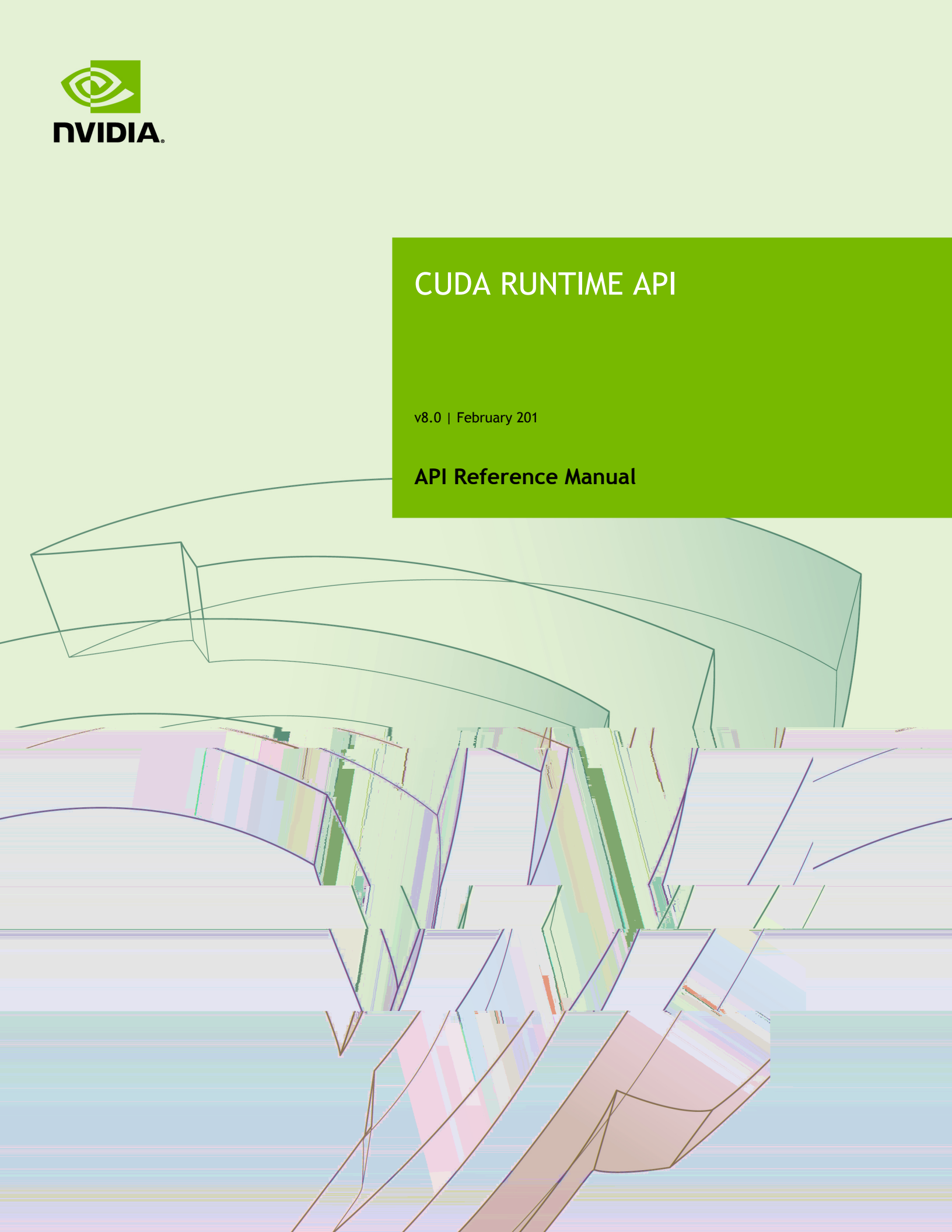

# CUDA RUNTIME API

v8.0 | February 201

## API Reference Manual

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e ..... 0

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b r erC r..... 1
erM e..... 1
a A r y..... 1
a M a eve C a ..... 1
M a eve C a ..... 1
a F erM e..... 1
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# C a er 1. DIFFERENCE ET EEN T E DRI ER AND RUNTIME API

**Complexity vs. control**

**Context management**

D ere e be ee e r ver a ru e API

**cudaDeviceSynchronize()**

**cudaDeviceReset()**

**cudaDeviceReset()**

# C a er 2.
# API NC R NI ATI N E A I R

**Memcpy**

**Memset**

**Kernel Launches**

# C a er .
# TREAM NC R NI ATI N E A I R

### Default stream

0 cudaStream_t

--default-stream

CUDA_API_PER_THREAD_DEFAULT_STREAM
CUDA_API_PER_THREAD_DEFAULT_STREAM

### Legacy default stream

CUcontext

cudaStreamWaitEvent()

k_1 s k_2
k_3 s

```
k_1<<<1, 1, 0, s>>>();
k_2<<<1, 1>>>();
k_3<<<1, 1, 0, s>>>();
```

k_2 k_1 k_3 k_2

cudaStreamNonBlocking

**CUstream cudaStream_t**

**CU_STREAM_LEGACY cudaStreamLegacy**

### Per-thread default stream

**CUcontext**

**CUstream**

**cudaStream_t** **CU_STREAM_PER_THREAD** **cudaStreamPerThread**

# C a er .
# M DU E


- 
- 
- 

- 
- 
- 
- 
- 

## .1. Dev e Ma a e e

### u aErr r u aC eDev e ev e u aDev ePr r

**Parameters**

**Returns**

**Description**

*device *prop

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e u aErr r u aDev e e A r bu e va ue u aDev eA r a r ev e

**Parameters**

**Returns**

**Description**

*value attr device

- 
- 
- 
- 
- 
- 
- 
- 

- 

- 
- 

- 
- 

- 

- 
- 

- 
- 
- 

- 
- 
- 

▸

▸

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev e e yPCI u l ev e ar u l

### Parameters

domain bus device function

### Returns

### Description

*device

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e u aErr r u aDev e e Ca eC u aFu Ca e Ca eC

**Parameters**

**Returns**

**Description**

pCacheConfig

pCacheConfig

- 
- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e u aErr r u aDev e e e a ue u a

**Parameters**

**Returns**

**Description**

*pValue limit

- 
- 

- 

- 

-

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aDev e e P2PA r bu e va ue u aDev eP2PA r a r r Dev e Dev e

## Parameters

## Returns

## Description

*value attrib srcDevice dstDevice

- 
- 
- 

srcDevice dstDevice

attrib value

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev e e PCI u l ar u l e ev e

**Parameters**

domain bus device function

name

**Returns**

**Description**

dev

pciBusId len

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aDev e e are Me C u a are Me C C

**Parameters**

### Returns

### Description

pConfig

- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r
## u aDev e e rea Pr r yRa e ea Pr r y
## rea e Pr r y

### Parameters

### Returns

### Description

*leastPriority *greatestPriority

*greatestPriority *leastPriority

*leastPriority *greatestPriority

*leastPriority *greatestPriority

*leastPriority *greatestPriority

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev eRe e v

### Returns

### Description

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aDev e e Ca eC
# u aFu Ca e a eC

**Parameters**

**Returns**

**Description**

cacheConfig

- 
- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aDev e e u a e va ue

**Parameters**

**Returns**

**Description**

limit value

- 
- 

- 

- 

▸

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev e e are Me C u a are Me C

**Parameters**

**Returns**

**Description**

- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aDev e y r e v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u a e Dev e ev e

**Parameters**

**Returns**

**Description**

*device

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u a e Dev eC u u

**Parameters**

### Returns

### Description

*count

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e Dev eF a u e a

### Parameters

### Returns

### Description

flags

## u aErr r u a e Dev ePr er e
## u aDev ePr r ev e

**Parameters**

**Returns**

## Description

*prop dev

```
struct cudaDeviceProp {
        char name[256];
        size_t totalGlobalMem;
        size_t sharedMemPerBlock;
        int regsPerBlock;
        int warpSize;
        size_t memPitch;
        int maxThreadsPerBlock;
        int maxThreadsDim[3];
        int maxGridSize[3];
        int clockRate;
        size_t totalConstMem;
        int major;
        int minor;
        size_t textureAlignment;
        size_t texturePitchAlignment;
        int deviceOverlap;
        int multiProcessorCount;
        int kernelExecTimeoutEnabled;
        int integrated;
        int canMapHostMemory;
        int computeMode;
        int maxTexture1D;
        int maxTexture1DMipmap;
        int maxTexture1DLinear;
        int maxTexture2D[2];
        int maxTexture2DMipmap[2];
        int maxTexture2DLinear[3];
        int maxTexture2DGather[2];
        int maxTexture3D[3];
        int maxTexture3DAlt[3];
        int maxTextureCubemap;
        int maxTexture1DLayered[2];
        int maxTexture2DLayered[3];
        int maxTextureCubemapLayered[2];
        int maxSurface1D;
        int maxSurface2D[2];
        int maxSurface3D[3];
        int maxSurface1DLayered[2];
        int maxSurface2DLayered[3];
        int maxSurfaceCubemap;
        int maxSurfaceCubemapLayered[2];
        size_t surfaceAlignment;
        int concurrentKernels;
        int ECCEnabled;
        int pciBusID;
        int pciDeviceID;
        int pciDomainID;
        int tccDriver;
        int asyncEngineCount;
        int unifiedAddressing;
        int memoryClockRate;
        int memoryBusWidth;
        int l2CacheSize;
        int maxThreadsPerMultiProcessor;
        int streamPrioritiesSupported;
        int globalL1CacheSupported;
        int localL1CacheSupported;
        size_t sharedMemPerMultiprocessor;
        int regsPerMultiprocessor;
        int managedMemSupported;
        int isMultiGpuBoard;
        int multiGpuBoardGroupID;
        int singleToDoublePrecisionPerfRatio;
        int pageableMemoryAccess;
        int concurrentManagedAccess;
    }
```

- 

device

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## u aErr r u al C eMe a e v evP r

**Parameters**

**Returns**

**Description**

## u aErr r u al e Eve a e u al Eve a e a e u aEve eve

**Parameters**

**Returns**

**Description**

## u aErr r u al e Me a e u al Me a e a e v evP r

**Parameters**

**Returns**

**Description**

# u aErr r u al e Eve a e u aEve eve u al Eve a e a e

**Parameters**

**Returns**

**Description**

# u aErr r u al e Me a e v evP r u al Me a e a e u e a

**Parameters**

**Returns**

**Description**

N uara ee are a e ab u e a re re ur e *devPtr. I ar u ar u e r e e ay re e ve e a e a re r e a e handle.

# u aErr r u a e Dev e ev e

**Parameters**

**Returns**

**Description**

device

device

device
device

device

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a e Dev eF a u e a

## Parameters

## Returns

## Description

flags

flags

device

flags

- flags
  C
  P C P
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## u aErr r u a e a Dev e ev e arr e

**Parameters**

**Returns**

**Description**

device_arr

len

len

len device_arr len

N e a u ay a re ur err r e r rev u a y r u au e .

## .2. T rea Ma a e e DEPRECATED

### u aErr r u aT rea E v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aT rea e Ca eC
# u aFu Ca e Ca eC

**Parameters**

**Returns**

**Description**

pCacheConfig

pCacheConfig

- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aT rea e e a ue u a

**Parameters**

**Returns**

**Description**

*pValue limit

- 
- 

-

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aT rea e Ca eC
# u aFu Ca e a eC

**Parameters**

**Returns**

**Description**

cacheConfig

- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aT rea e u a e va ue

**Parameters**

**Returns**

**Description**

limit value

- 
- 

-

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aT rea y r e v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## . . Err r a

## ev e ar u a e Err rNa e u aErr r err r

**Parameters**

**Returns**

`char*`

**Description**

## ev e ar u a e Err r r u aErr r err r

**Parameters**

**Returns**

`char*`

**Description**

## ev e u aErr r u a e a Err r v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aPee A a Err r v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## . . rea Ma a e e

y e e v CUDART C u a rea Ca ba u a rea rea u aErr r a u v u erDa a

u aErr r u a rea A Ca ba u a rea rea u a rea Ca ba a ba v u erDa a u e a

**Parameters**

### Returns

### Description

- 
- 
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- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a rea A a Me A y u a rea rea v evP r e e u e a

**Parameters**

**Returns**

**Description**

stream length devPtr

devPtr

length

length

flags

flags

stream

stream

stream

stream

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea Crea e u a rea rea

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u a rea Crea e F a u a rea rea u e a

**Parameters**

**Returns**

### Description

flags

flags

- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea Crea e Pr r y u a rea rea u e a r r y

### Parameters

### Returns

### Description

pStream

priority

- N e a u ay a re ur err r e r rev u a y r u au e .
- rea r r e are u r e y PU u e a ab y . r er.
- I e urre e e a y u e er e au e r r y rea are a e e by e rea r r y. rea r r e ave e e - - ev e a ev e- - e ry era .

## ev e u aErr r u a rea De r y u a rea rea

**Parameters**

**Returns**

**Description**

stream

stream

stream

stream

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea e F a u a rea rea u e a

### Parameters

### Returns

### Description

flags

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea e Pr r y u a rea rea r r y

**Parameters**

**Returns**

**Description**

priority

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea uery u a rea rea

**Parameters**

**Returns**

### Description

stream

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a rea y r e u a rea rea

### Parameters

### Returns

### Description

stream

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e u aErr r u a rea a Eve u a rea rea u aEve eve u e a

**Parameters**

**Returns**

**Description**

stream event

event stream

stream

event

event

stream

event

- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

## . . Eve Ma a e e

### u aErr r u aEve Crea e u aEve eve

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

### ev e u aErr r u aEve Crea e F a u aEve eve u e a

**Parameters**

### Returns

### Description

- 
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-

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aEve De r y u aEve eve

### Parameters

### Returns

### Description

event

event

event

event

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aEve E a e T e a u aEve ar u aEve e

### Parameters

start end

### Returns

### Description

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aEve uery u aEve eve

**Parameters**

**Returns**

**Description**

event

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aEve Re r u aEve eve u a rea rea

### Parameters

### Returns

### Description

event

event event

▸ T u u e a ar e au rea e a .

▸ N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aEve y r e u aEve eve

**Parameters**

**Returns**

**Description**

event

N e a u ay a re ur err r e r rev u a y r u au e .

# . . E e u C r

## ev e u aErr r u aFu e A r bu e u aFu A r bu e a r v u

### Parameters

### Returns

### Description

func func

__global__

attr

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a u a e func ara a er a e re a e CUDA .1 a re ve CUDA .0.

# u aErr r u aFu e Ca eC v u u aFu Ca e a eC

**Parameters**

**Returns**

**Description**

cacheConfig
func

func

func __global__

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a u a e `func` ara a er a e re a e CUDA .1 a re ve CUDA .0.

## u aErr r u aFu e are Me C
## v u u a are Me C

**Parameters**

**Returns**

**Description**

▸

▸

▸

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a u a e `func` ara a er a e re a e CUDA .1 a re ve CUDA .0.

## ev e v u a e Para e er u er e a e e e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e v u a e Para e er u er 2 v u r D e b D e u e are Me e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

P ea e re er E e u C ura a Para e er u er ay u r e CUDA Pr ra u e r e e a e e r au ura a ara e er ay u re e ve y.

## u aErr r u a au er e v u r D b D v ar e are Me u a rea rea

### Parameters

### Returns

### Description

func gridDim gridDim.x gridDim.y gridDim.z blockDim blockDim.x blockDim.y blockDim.z

args args[0] args[N - 1]

sharedMem

stream

- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e D ub eF rDev e ub e

### Parameters

### Returns

### Description

d

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e D ub eF r ub e

**Parameters**

**Returns**

**Description**

d

N e a u ay a re ur err r e r rev u a y r u au e .

## . . u a y

# ev e u aErr r u a u a yMa A ve PerMu r e r u v u b e e y a Me e

**Parameters**

**Returns**

**Description**

*numBlocks

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a u a yMa A ve PerMu r e r F a

# u v u b e e y a Me e u e a

### Parameters

### Returns

### Description

*numBlocks

flags

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N e a u ay a re ur err r e r rev u a y r u au e .

# .8. E e u C r DEPRECATED

u aErr r u aC ureCa r D
b D e are Me u a rea
rea

**Parameters**

**Returns**

**Description**

- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a au v u

### Parameters

### Returns

### Description

func func
func
__global__

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a var ab e a e symbol ara a er a re ve CUDA .0.

## u aErr r u a e u Ar u e v ar e e e e

**Parameters**

**Returns**

**Description**

size arg offset

N e a u ay a re ur err r e r rev u a y r u au e .

## . . Me ry Ma a e e

## u aErr r u aArray e l u aC a e F r a De e u aE e e e u e a u aArray array

**Parameters**

**Returns**

**Description**

*desc *extent *flags array

*desc *extent *flags

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aFree v evP r

**Parameters**

**Returns**

### Description

devPtr

devPtr

devPtr

*devPtr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aFreeArray u aArray array

### Parameters

### Returns

### Description

array

array

devPtr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aFree v r

**Parameters**

**Returns**

**Description**

hostPtr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aFreeM a e Array u aM a e Array a e Array

**Parameters**

**Returns**

**Description**

mipmappedArray

mipmappedArray

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e M a e Array eve u aArray eve Array u aM a e Array a e Array u e eve

### Parameters

### Returns

### Description

*levelArray

mipmappedArray

level

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e y b A re v evP r v y b

### Parameters

### Returns

### Description

*devPtr symbol symbol
symbol
symbol *devPtr

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

## u aErr r u a e y b e e e v y b

### Parameters

### Returns

### Description

*size symbol symbol
symbol symbol
*size

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

## u aErr r u a A v e e u e a

### Parameters

### Returns

### Description

size

flags

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N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a e Dev eP er v Dev e v u e a

**Parameters**

**Returns**

**Description**

pHost

pHost

pHost

pHost

flags

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e F a u e F a v

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a Re er v r e e u e a

**Parameters**

### Returns

### Description

ptr size
flags

flags

-
-
-
-

ptr

ptr

ptr

ptr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a U re er v r

### Parameters

### Returns

### Description

ptr

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aMa v evP r e e

### Parameters

### Returns

### Description

size *devPtr

*devPtr

# u aErr r u aMa D u aP e P r e DevP r u aE e e e

**Parameters**

width

**Returns**

**Description**

width height depth
ptr

pitch pitchedDevPtr

xsize ysize
width height
extent

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMa DArray u aArray array u aC a e F r a De e u aE e e e u e a

### Parameters

width

### Returns

### Description

desc

*array

```
struct cudaChannelFormatDesc {
          int x, y, z, w;
          enum cudaChannelFormatKind
              f;
      };
```

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flags

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| CUDA array type | Valid extents that must always be met {(width range in elements), (height range), (depth range)} | Valid extents with cudaArraySurfaceLoadStore set {(width range in elements), (height range), (depth range)} |
|---|---|---|
| 1D | 1 a Te ure1D 0 0 | 1 a ur a e1D 0 0 |
| 2D | 1 a Te ure2D 0<br>1 a Te ure2D 1 0 | 1 a ur a e2D 0<br>1 a ur a e2D 1 0 |

| CUDA array type | Valid extents that must always be met {(width range in elements), (height range), (depth range)} | Valid extents with cudaArraySurfaceLoadStore set {(width range in elements), (height range), (depth range)} |
|---|---|---|
| D | 1 a Te ure D 0<br>1 a Te ure D 1<br>1 a Te ure D 2 R<br>1 a Te ure DA 0<br>1 a Te ure DA 1<br>1 a Te ure DA 2 | 1 a ur a e D 0<br>1 a ur a e D 1<br>1 a ur a e D 2 |
| 1D ayere | 1 a Te ure1D ayere 0 0<br>1 a Te ure1D ayere 1 | 1 a ur a e1D ayere 0 0<br>1 a ur a e1D ayere 1 |
| 2D ayere | 1 a Te ure2D ayere 0<br>1 a Te ure2D ayere 1<br>1 a Te ure2D ayere 2 | 1 a ur a e2D ayere 0<br>1 a ur a e2D ayere 1<br>1 a ur a e2D ayere 2 |
| Cube a | 1 a Te ureCube a<br>1 a Te ureCube a | 1 a ur a eCube a<br>1 a ur a eCube a |
| Cube a ayere | 1 a Te ureCube a ayere 0<br>1 a Te ureCube a ayere 0<br>1 a Te ureCube a ayere 1 | 1 a ur a eCube a ayere 0<br>1 a ur a eCube a ayere 0<br>1 a ur a eCube a ayere 1 |

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aMa Array u aArray array u aC a e F r a De e e e e u e a

**Parameters**

### Returns

### Description

desc

*array

```
struct cudaChannelFormatDesc {
        int x, y, z, w;
    enum cudaChannelFormatKind
            f;
    };
```

flags

- 
- 
- 

width height

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMa v r e e

**Parameters**

**Returns**

**Description**

size

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMa Ma a e v evP r e e u e a

**Parameters**

**Returns**

**Description**

size *devPtr

size

flags flags

flags

# u aErr r u aMa M a e Array u aM a e Array a e Array u aC a e F r a De e u aE e e e u e u eve u e a

**Parameters**

width

**Returns**

**Description**

desc

*mipmappedArray numLevels

```
    struct cudaChannelFormatDesc {
              int x, y, z, w;
              enum cudaChannelFormatKind
                  f;
          };
```

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flags

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| CUDA array type | Valid extents {(width range in elements), (height range), (depth range)} |
|---|---|
| 1D | 1 a Te ure1DM a 0 0 |
| 2D | 1 a Te ure2DM a 0 1 a Te ure2DM a 1 0 |
| D | 1 a Te ure D 0 1 a Te ure D 1 1 a Te ure D 2 |
| 1D ayere | 1 a Te ure1D ayere 0 0 1 a Te ure1D ayere 1 |
| 2D ayere | 1 a Te ure2D ayere 0 1 a Te ure2D ayere 1 1 a Te ure2D ayere 2 |
| Cube a | 1 a Te ureCube a 1 a Te ureCube a |
| Cube a ayere | 1 a Te ureCube a ayere 0 1 a Te ureCube a ayere 0 1 a Te ureCube a ayere 1 |

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aMa P v evP r e e e e

**Parameters**

### Returns

### Description

width height
*devPtr

*pitch
pitch

T

```
    T* pElement = (T*)((char*)BaseAddress + Row * pitch) + Column;
```

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMe A v e v evP r e u u aMe ryA v e a v e ev e

**Parameters**

**Returns**

**Description**

devPtr count

advice

▶

device

▶

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device

device

device

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device device

device

device

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device

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMe y v v r e u u aMe y

### Parameters

### Returns

### Description

count src
dst kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

u aErr r u aMe y2D v e
v r e e
e e u aMe y

### Parameters

**Returns**

**Description**

height width
src dst kind

dpitch spitch
dst src
width
dpitch spitch dst src

dpitch spitch

N e a u ay a re ur err r e r rev u a y r u
au e .

u aErr r u aMe y2DArrayT Array
u aArray e e D e
e D u aArray r e e r

# e e r e e u aMe y

**Parameters**

**Returns**

**Description**

height width srcArray
wOffsetSrc hOffsetSrc
dst wOffsetDst hOffsetDst kind

wOffsetDst width
dst wOffsetSrc width
src

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

ev e u aErr r u aMe y2DA y
v e v r e
e e e u aMe y
u a rea rea

**Parameters**

**Returns**

### Description

height width
src dst kind

dpitch spitch
dst src
width
dpitch spitch
dst src

dpitch spitch

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMe y2DFr Array v e u aArray r e

# e e e e e e u aMe y

**Parameters**

**Returns**

**Description**

height width srcArray
wOffset hOffset
dst kind

dpitch
dst wOffset width
src width dpitch
dpitch

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

u aErr r u aMe y2DFr ArrayA y
v e u aArray r e
e e e e e e
u aMe y u a rea rea

**Parameters**

### Returns

### Description

height width srcArray
wOffset hOffset
dst kind

dpitch
dst wOffset width
src width dpitch
dpitch

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMe y2DT Array
## u aArray e e e e

# v r e e e
u aMe y

**Parameters**

**Returns**

**Description**

height width
src dst wOffset
hOffset kind

spitch
src wOffset width
dst width spitch
spitch

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

u aErr r u aMe y2DT ArrayA y
u aArray e e e e
v r e e e e
u aMe y u a rea rea

**Parameters**

### Returns

### Description

height width
src dst wOffset
hOffset kind

spitch
src wOffset width
dst width spitch
spitch

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

# u aErr r u aMe y D u aMe y DPar

## Parameters

## Returns

## Description

```
struct cudaExtent {
        size_t width;
        size_t height;
        size_t depth;
      };
      struct cudaExtent
                  make_cudaExtent(size_t w, size_t h, size_t d);

      struct cudaPos {
        size_t x;
        size_t y;
        size_t z;
      };
      struct cudaPos
                  make_cudaPos(size_t x, size_t y, size_t z);

      struct cudaMemcpy3DParms {
        cudaArray_t
                  srcArray;
        struct cudaPos
                  srcPos;
        struct cudaPitchedPtr
                  srcPtr;
        cudaArray_t
                  dstArray;
        struct cudaPos
                  dstPos;
        struct cudaPitchedPtr
                  dstPtr;
        struct cudaExtent
                  extent;
        enum cudaMemcpyKind
                  kind;
      };
```

```
cudaMemcpy3DParms myParms = {0};
```

srcArray srcPtr
dstArray dstPtr

srcPos dstPos

extent

kind

srcPos extent
dstPos
extent

srcPtr dstPtr

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

# ev e u aErr r u aMe y DA y u aMe y DPar u a rea rea

## Parameters

## Returns

## Description

```
struct cudaExtent {
        size_t width;
        size_t height;
        size_t depth;
      };
      struct cudaExtent
                  make_cudaExtent(size_t w, size_t h, size_t d);

      struct cudaPos {
        size_t x;
        size_t y;
        size_t z;
      };
      struct cudaPos
                  make_cudaPos(size_t x, size_t y, size_t z);

      struct cudaMemcpy3DParms {
        cudaArray_t
                  srcArray;
        struct cudaPos
                  srcPos;
        struct cudaPitchedPtr
                  srcPtr;
        cudaArray_t
                  dstArray;
        struct cudaPos
                  dstPos;
        struct cudaPitchedPtr
                  dstPtr;
        struct cudaExtent
                  extent;
        enum cudaMemcpyKind
                  kind;
      };
```

```
cudaMemcpy3DParms myParms = {0};
```

srcArray srcPtr
dstArray dstPtr

srcPos dstPos

extent

kind

srcPos extent
dstPos
extent

srcPtr dstPtr

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMe y DPeer u aMe y DPeerPar

**Parameters**

**Returns**

**Description**

p

- N e a u ay a re ur err r e r rev u a y r u au e .

- T u e b y r u be av r r u e a e.

## u aErr r u aMe y DPeerA y u aMe y DPeerPar u a rea rea

**Parameters**

**Returns**

**Description**

p

- N e a u ay a re ur err r e r rev u a y r u au e.
- T u e b a y r u be av r r u e a e.
- T u u e a ar e au rea e a .

## u aErr r u aMe yArrayT Array u aArray e e D e e D

# u aArray r e e r e e r e u u aMe y

**Parameters**

**Returns**

**Description**

count src
wOffsetSrc hOffsetSrc dst
wOffsetDst hOffsetDst kind

N e a u ay a re ur err r e r rev u a y r u au e .

# ev e u aErr r u aMe yA y v
# v r e u u aMe y
# u a rea rea

**Parameters**

**Returns**

**Description**

count src
dst kind

dst src

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

u aErr r u aMe yFr Array v
u aArray r e e e e
e u u aMe y

**Parameters**

### Returns

### Description

count src
wOffset dst kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

## u aErr r u aMe yFr ArrayA y
v u aArray r e e
e e e u u aMe y
u a rea rea

### Parameters

### Returns

### Description

count src
wOffset dst kind

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

# u aErr r u aMe yFr y b v v y b e u e e u aMe y

## Parameters

## Returns

## Description

count offset
symbol dst
symbol
kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

# u aErr r u aMe yFr y b A y v v y b e u e e u aMe y u a rea rea

**Parameters**

**Returns**

**Description**

count offset
symbol dst
symbol
kind

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .
- U e a r a a var ab e a e `symbol` ara a er a e re a e CUDA .1 a re ve CUDA .0.

## u aErr r u aMe yPeer v Dev e v r r Dev e e u

**Parameters**

**Returns**

### Description

dst
dstDevice src
srcDevice count

srcDevice
dstDevice

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

## u aErr r u aMe yPeerA y v
## Dev e v r r Dev e e
## u u a rea rea

### Parameters

### Returns

### Description

dst
dstDevice src
srcDevice count

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

u aErr r u aMe yT Array u aArray
e e e e v r
e u u aMe y

### Parameters

### Returns

### Description

count src
dst wOffset hOffset kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .

u aErr r u aMe yT ArrayA y
u aArray e e e e
v r e u u aMe y
u a rea rea

### Parameters

### Returns

### Description

count src
dst wOffset hOffset kind

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

# u aErr r u aMe yT y b v y b v r e u e e u aMe y

## Parameters

## Returns

## Description

count src offset symbol symbol kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

# u aErr r u aMe yT y b A y v y b v r e u e e u aMe y u a rea rea

**Parameters**

**Returns**

**Description**

count src offset symbol symbol kind

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMe Pre e A y v evP r e u Dev e u a rea rea

### Parameters

### Returns

### Description

devPtr
dstDevice
count stream

dstDevice
dstDevice
stream

dstDevice

dstDevice

dstDevice dstDevice

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

- data
  dataSize

  data

  dataSize data

  data

- data dataSize

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMe Ra e e A r bu e
## v a a e a a e u aMe Ra eA r bu e

# a r bu e e u A r bu e v evP r e u

**Parameters**

**Returns**

**Description**

devPtr count

attributes

numAttributes dataSizes

numAttributes data

- 
- 
- 
- 

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aMe e v evP r va ue e u

**Parameters**

**Returns**

**Description**

count devPtr value

devPtr

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .

# u aErr r u aMe e 2D v evP r e va ue e e e

## Parameters

## Returns

## Description

value height width dstPtr pitch dstPtr

devPtr

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .

# ev e u aErr r u aMe e 2DA y v evP r e va ue e e e u a rea rea

## Parameters

## Returns

## Description

value height width dstPtr pitch dstPtr

stream stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .
- T u u e a ar e au rea e a .

# u aErr r u aMe e D u aP e P r e DevP r va ue u aE e e e

## Parameters

width

## Returns

## Description

value
pitchedDevPtr pitch pitchedDevPtr
pitchedDevPtr
xsize
ysize

width height
depth

width xsize pitchedDevPtr
xsize
height ysize pitchedDevPtr
height ysize

pitchedDevPtr

pitchedDevPtr

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .

# ev e u aErr r u aMe e DA y u aP e P r e DevP r va ue u aE e e e u a rea rea

**Parameters**

width

**Returns**

**Description**

value
pitchedDevPtr pitch pitchedDevPtr
pitchedDevPtr
xsize
ysize

width height
depth

width xsize pitchedDevPtr
xsize
height ysize pitchedDevPtr
height ysize

pitchedDevPtr

stream stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .
- T u u e a ar e au rea e a .

ev e u aErr r u aMe e A y v
evP r va ue e u u a rea rea

**Parameters**

**Returns**

**Description**

count devPtr
value

stream stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- ee a e e y r a e a .
- T u u e a ar e au rea e a .

# a e u aE e e e e

## Parameters

## Returns

w h d

## Description

w h d

## a e u aP e P r v e e e y

**Parameters**

**Returns**

d p xsz ysz

**Description**

d p xsz ysz

## a e u aP e e y e

**Parameters**

**Returns**

x y z

**Description**

x y z

# .10. U e A re

# u aErr r u aP er e A r bu e u aP erA r bu e a r bu e v r

**Parameters**

### Returns

### Description

*attributes ptr

```
struct cudaPointerAttributes {
        enum cudaMemoryType
            memoryType;
        int device;
        void *devicePointer;
        void *hostPointer;
        int isManaged;
    }
```

- ptr
- ptr ptr
  ptr ptr
- ptr ptr
- ptr
  ptr
- ptr

# .11. Peer Dev e Me ry A e

## u aErr r u aDev eCa A e Peer a A e Peer ev e eerDev e

**Parameters**

peerDevice

device

**Returns**

**Description**

*canAccessPeer device peerDevice peerDevice device

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev eD ab ePeerA e eerDev e

**Parameters**

**Returns**

**Description**

peerDevice

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aDev eE ab ePeerA e eerDev e u e a

**Parameters**

**Returns**

**Description**

peerDevice

peerDevice

peerDevice

peerDevice

flags

N e a u ay a re ur err r e r rev u a y r u au e .

## .12. e l er erab y

## e u u a Dev e

**Values**

# u aErr r u a e Dev e u e Cu aDev eC u Cu aDev e u e u aDev eC u u a Dev e ev e

## Parameters

pCudaDevices

## Returns

## Description

*pCudaDeviceCount

*pCudaDevices

cudaDeviceCount

- T u u r e Ma .
- N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a ra Re er u er u a ra Re ur e re ur e u bu er u e a

**Parameters**

**Returns**

**Description**

buffer
resource flags

- 
- 
- 

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a ra Re erl a e u a ra Re ur e re ur e u a e e u ar e u e a

## Parameters

image

## Returns

## Description

image resource target flags

- 
- 
- 
- 

- 
- 
- 
- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e Dev e ev e PUN u

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## .1 . e l er erab y DEPRECATED

### e u u a Ma F a

**Values**

### u aErr r u a Ma u er b e v evP r u bu b

**Parameters**

**Returns**

**Description**

bufObj
*devPtr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a Ma u er b e A y v evP r u bu b u a rea rea

**Parameters**

**Returns**

**Description**

bufObj
*devPtr

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a Re er u er b e u bu b

**Parameters**

**Returns**

**Description**

bufObj

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a e u er b e Ma F a u bu b u e a

## Parameters

## Returns

## Description

bufObj

bufObj flags

- 
- 
- 

bufObj

bufObj

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e Dev e ev e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a U a u er b e u bu b

**Parameters**

**Returns**

**Description**

bufObj

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a U a u er b e A y u bu b u a rea rea

### Parameters

### Returns

### Description

bufObj

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a U re er u er b e u bu b

**Parameters**

**Returns**

**Description**

bufObj

N e a u ay a re ur err r e r rev u a y r u au e .

# .1 . D re D l er erab y

# e u u aD D Dev e

## Values

## u aErr r u aD D e Dev e ev e ar A a erNa e

## Parameters

## Returns

## Description

*device
pszAdapterName

pszAdapterName

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aD D e Dev e u e Cu aDev eC u Cu aDev e u e u aDev eC u ID re DDev e D D Dev e u aD D Dev e ev e

## Parameters

pD3D9Device

pD3D9Device

pCudaDevices

## Returns

## Description

*pCudaDeviceCount

pD3D9Device

*pCudaDevices cudaDeviceCount

pD3D9Device

pDevice

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D e D re DDev e ID re DDev e D D Dev e

**Parameters**

**Returns**

**Description**

*ppD3D9Device

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D e D re DDev e ID re DDev e D D Dev e ev e

**Parameters**

**iNturns**

### Description

pD3D9Device
device device

device
device
device
pD3D9Device
pD3D9Device
device

pD3DDdevice

N e a u ay a re ur err r e r rev u a y r u au e .

u aErr r
u a ra D D Re erRe ur e
u a ra Re ur e re ur e lD re DRe ur e
D DRe ur e u e a

### Parameters

### Returns

### Description

pD3DResource

pD3DResource

pD3DResource

- 
- 
- 

- 

flags

- 
- 
- 

- 
- 
- 

- 

- 
- 
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- 
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- 
- 
- 
- 
- 

pD3DResource

pD3DResource

N e a u ay a re ur err r e r rev u a y r u au e .

## .1 . D re D l er erab y DEPRECATED

## e u u aD D Ma F a

**Values**

## e u u aD D Re erF a

**Values**

## u aErr r u aD D Ma Re ur e u
## ID re DRe ur e Re ur e

**Parameters**

**Returns**

**Description**

count ppResources

ppResources

ppResources
ppResources
ppResources

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D Re erRe ur e ID re DRe ur e Re ur e u e a

**Parameters**

**Returns**

**Description**

pResource

pResource

pResource

▸

- 
- 

- 

flags

- 
void*

- 
- 
- 

- 

- 

pResource

pResource

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aD D Re ur e e Ma e Array u aArray Array ID re DRe ur e Re ur e u e a e u e eve

**Parameters**

**Returns**

**Description**

*pArray
pResource face level
pArray pResource

pResource
pResource

pResource

face level

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aD D Re ur e e Ma e P e P e ID re DRe ur e Re ur e u e a e u e eve

**Parameters**

**Returns**

**Description**

*pPitch *pPitchSlice
pResource face level
pPitch pPitchSlice pResource

pPitch pPitchSlice

pResource
pResource
pResource

pResource

face level

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D Re ur e e Ma e P er v P er ID re DRe ur e Re ur e u e a e u e eve

**Parameters**

**Returns**

**Description**

*pPointer
pResource face level
pPointer pResource

pResource
pResource
pResource

pResource face
face
face

pResource level
level
level

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D Re ur e e Ma e e e e lD re DRe ur e Re ur e u e a e u e eve

**Parameters**

### Returns

### Description

*pSize
pResource face level pSize
pResource

pResource

pResource

pResource

face level

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r
u aD D Re ur e e ur a eD e e
e e e De
lD re DRe ur e Re ur e u e a e
u e eve

### Parameters

### Returns

### Description

*pWidth *pHeight *pDepth
pResource face level

pWidth pHeight pDepth
*pDepth

pResource
pResource

face level

N e a u ay a re ur err r e r rev u a y r u
au e .

# u aErr r u aD D Re ur e e Ma F a ID re DRe ur e Re ur e u e a

**Parameters**

**Returns**

**Description**

pResource

pResource flags

- 
- 
- 

pResource

pResource

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u aD D U a Re ur e u ID re DRe ur e Re ur e

**Parameters**

**Returns**

**Description**

count ppResources

ppResources
ppResources
ppResources

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D U re erRe ur e ID re DRe ur e Re ur e

**Parameters**

**Returns**

**Description**

pResource

pResource

N e a u ay a re ur err r e r rev u a y r u au e .

## .1 . D re D 10 l er erab y

## e u u aD D10Dev e

**Values**

## u aErr r u aD D10 e Dev e ev e ID lA a er A a er

**Parameters**

**Returns**

**Description**

*device
pAdapter
pAdapter

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10 e Dev e u e Cu aDev eC u Cu aDev e u e

# u aDev eC u ID D10Dev e D D10Dev e u aD D10Dev e ev e

**Parameters**

pD3D10Device

pD3D10Device

pCudaDevices

**Returns**

**Description**

*pCudaDeviceCount

pD3D10Device

*pCudaDevices cudaDeviceCount

pD3D10Device

pDevice

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r
# u a ra D D10Re erRe ur e
# u a ra Re ur e re ur e lD D10Re ur e
# D DRe ur e u e a

**Parameters**

**Returns**

**Description**

pD3DResource

pD3DResource

pD3DResource

- 
- 
- 
- 

flags

- 

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- 
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pD3DResource

pD3DResource

N e a u ay a re ur err r e r rev u a y r u au e .

## .1 . D re D 10 I er erab y DEPRECATED

### e u u aD D10Ma F a

**Values**

### e u u aD D10Re erF a

**Values**

### u aErr r u aD D10 e D re DDev e ID D10Dev e D D10Dev e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10Ma Re ur e
## u ID D10Re ur e Re ur e

**Parameters**

**Returns**

**Description**

count ppResources

ppResources

ppResources
ppResources
ppResources

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10Re erRe ur e ID D10Re ur e Re ur e u e a

### Parameters

### Returns

### Description

pResource

pResource

pResource

- flags cudaD3D10RegisterFlagsArray
-
-
-

flags

- void*

- CUarray

- pResource

pResource

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r
## u aD D10Re ur e e Ma e Array u aArray

## Array ID D10Re ur e Re ur e u e ubRe ur e

### Parameters

### Returns

### Description

*ppArray
pResource subResource
ppArray pResource

pResource
pResource

pResource

subResource

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10Re ur e e Ma e P e P

# e P e ID D10Re ur e Re ur e u e ubRe ur e

**Parameters**

**Returns**

**Description**

*pPitch *pPitchSlice
pResource subResource
pPitch pPitchSlice pResource

pPitch pPitchSlice
pResource
pResource
pResource

pResource

subResource

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10Re ur e e Ma e P er v P er ID D10Re ur e Re ur e u e ubRe ur e

**Parameters**

**Returns**

**Description**

*pPointer
pResource subResource pPointer
pResource

pResource
pResource
pResource

pResource subResource pResource
subResource

N e a u ay a re ur err r e r rev u a y r u
au e .

## u aErr r u aD D10Re ur e e Ma e e
e e ID D10Re ur e Re ur e u e
ubRe ur e

### Parameters

### Returns

### Description

*pSize
pResource subResource pSize
pResource

pResource
pResource

pResource

subResource

N e a u ay a re ur err r e r rev u a y r u au e .

u aErr r
u aD D10Re ur e e ur a eD e
e e e e De
ID D10Re ur e Re ur e u e ubRe ur e

**Parameters**

**Returns**

**Description**

*pWidth *pHeight *pDepth
pResource subResource

pWidth pHeight pDepth
*pDepth

pResource
pResource

subResource

N e a u ay a re ur err r e r rev u a y r u
au e .

## u aErr r u aD D10Re ur e e Ma F a
## ID D10Re ur e Re ur e u e a

**Parameters**

**Returns**

**Description**

pResource

pResource flags

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▸

▸

pResource
pResource

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10 e D re DDev e ID D10Dev e D D10Dev e ev e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10U a Re ur e u ID D10Re ur e Re ur e

**Parameters**

**Returns**

**Description**

count ppResources

ppResources
ppResources
ppResources

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D10U re erRe ur e ID D10Re ur e Re ur e

**Parameters**

**Returns**

**Description**

resource

pResource

N e a u ay a re ur err r e r rev u a y r u au e .

# .18. D re D 11 l er erab y

## e u u aD D11Dev e

**Values**

## u aErr r u aD D11 e Dev e ev e ID lA a er A a er

### Parameters

### Returns

### Description

*device
pAdapter
pAdapter

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aD D11 e Dev e u e Cu aDev eC u Cu aDev e u e

# u aDev eC u ID D11Dev e D D11Dev e u aD D11Dev e ev e

## Parameters

pD3D11Device

pD3D11Device

pCudaDevices

## Returns

## Description

*pCudaDeviceCount

pD3D11Device

*pCudaDevices cudaDeviceCount

pD3D11Device

pDevice

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a ra D D11Re erRe ur e u a ra Re ur e re ur e lD D11Re ur e D DRe ur e u e a

**Parameters**

**Returns**

**Description**

pD3DResource

pD3DResource

pD3DResource

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flags

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pD3DResource

pD3DResource

N e a u ay a re ur err r e r rev u a y r u au e .

## .1 . D re D 11 l er erab y DEPRECATED

### u aErr r u aD D11 e D re DDev e ID D11Dev e D D11Dev e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

### u aErr r u aD D11 e D re DDev e ID D11Dev e D D11Dev e ev e

**Parameters**

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## .20. DPAU I er erab y

u aErr r
u a ra DPAURe er u u ur a e
u a ra Re ur e re ur e u u ur a e
v ur a e u e a

**Parameters**

### Returns

### Description

vdpSurface
resource
flags

- 
- 
-

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a ra DPAURe er e ur a e u a ra Re ur e re ur e e ur a e v ur a e u e a

### Parameters

### Returns

### Description

vdpSurface
resource
flags

▸

▸

▸

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a DPAU e Dev e ev e Dev e v Dev e e Pr A re v e Pr A re

### Parameters

### Returns

### Description

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a DPAU e DPAUDev e ev e Dev e v Dev e e Pr A re v e Pr A re

### Parameters

### Returns

### Description

vdpDevice
device device

device

device
device

N e a u ay a re ur err r e r rev u a y r u au e .

## .21. E I er erab y

u aErr r
u aE rea C u erA u reFra e
u aE rea C e
u a ra Re ur e Cu aRe ur e u a rea
rea u e e u

**Parameters**

**Returns**

**Description**

pCudaResource

u aErr r u aE rea C u erC e
u aE rea C e E rea R
e rea

**Parameters**

**Returns**

**Description**

eglStream

u aErr r
u aE rea C u erC e F a

## u aE rea C e E rea R e rea u e a

**Parameters**

**Returns**

**Description**

stream

flags

## u aErr r u aE rea C u erRe ea eFra e u aE rea C e u a ra Re ur e Cu aRe ur e u a rea rea

**Parameters**

**Returns**

**Description**

pCudaResource

## u aErr r u aE rea Pr u erC e u aE rea C e E rea R e rea E E e

**Parameters**

**Returns**

**Description**

stream

## u aErr r u aE rea Pr u erD e u aE rea C e

**Parameters**

**Returns**

**Description**

## u aErr r u aE rea Pr u erPre e Fra e u aE rea C e u aE Fra e e ra e u a rea rea

**Parameters**

**Returns**

### Description

```
typedef struct cudaEglFrame_st {
          union {
              cudaArray_t            pArray[CUDA_EGL_MAX_PLANES];
              struct cudaPitchedPtr  pPitch[CUDA_EGL_MAX_PLANES];
          } frame;
          cudaEglPlaneDesc planeDesc[CUDA_EGL_MAX_PLANES];
          unsigned int planeCount;
          cudaEglFrameType frameType;
          cudaEglColorFormat eglColorFormat;
      } cudaEglFrame;
```

## u aErr r

u aE rea Pr u erRe ur Fra e

u aE rea C e u aE Fra e

e ra e u a rea rea

### Parameters

### Returns

### Description

# u aErr r u a ra E Re erl a e u a ra Re ur e Cu aRe ur e E l a e R a e u e a

**Parameters**

**Returns**

**Description**

image
pCudaResource

pCudaResource

flags

▶

▶

▸

u aErr r
u a ra Re ur e e Ma e E Fra e
u aE Fra e e Fra e u a ra Re ur e
re ur e u e e u e eve

**Parameters**

**Returns**

**Description**

*eglFrame
resource

```
typedef struct cudaEglFrame_st {
          union {
              cudaArray_t             pArray[CUDA_EGL_MAX_PLANES];
              struct cudaPitchedPtr   pPitch[CUDA_EGL_MAX_PLANES];
          } frame;
          cudaEglPlaneDesc planeDesc[CUDA_EGL_MAX_PLANES];
          unsigned int planeCount;
          cudaEglFrameType frameType;
          cudaEglColorFormat eglColorFormat;
      } cudaEglFrame;
```

# .22. ra l er erab y

## u aErr r u a ra Ma Re ur e u u a ra Re ur e re ur e u a rea rea

**Parameters**

**Returns**

**Description**

count resources

resources

resources

stream

resources

resources

- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r

## u a ra Re ur e e Ma e M a e Array

## u aM a e Array a e Array

## u a ra Re ur e re ur e

### Parameters

resource

### Returns

### Description

*mipmappedArray

resource mipmappedArray

resource

resource

resource

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a ra Re ur e e Ma e P er v evP r e e u a ra Re ur e re ur e

### Parameters

resource

*devPtr

### Returns

### Description

*devPtr resource *size devPtr resource

resource

resource

resource

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a ra Re ur e e Ma F a u a ra Re ur e re ur e u e a

### Parameters

### Returns

### Description

flags resource

flags resource flags

- resource resource
- resource
- resource

resource

resource

resource

flags

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a ra ubRe ur e e Ma e Array u aArray array u a ra Re ur e re ur e u e arrayl e u e eve

### Parameters

resource

### Returns

### Description

*array resource arrayIndex mipLevel array resource

resource arrayIndex resource mipLevel resource resource

N e a u ay a re ur err r e r rev u a y r u au e .

# u aErr r u a ra U a Re ur e u u a ra Re ur e re ur e u a rea rea

### Parameters

### Returns

### Description

count resources

resources

stream

resources

resources

- T u u e a ar e au rea e a .
- N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a ra U re erRe ur e u a ra Re ur e re ur e

**Parameters**

**Returns**

**Description**

resource

resource

N e a u ay a re ur err r e r rev u a y r u au e .

## .2 . Te ure Re ere e Ma a e e

# u aErr r u a Te ure e e e ureRe ere e e re v evP r u aC a e F r a De e e e

**Parameters**

**Returns**

**Description**

size devPtr texref desc

texref

*offset

offset

size desc

N e a u ay a re ur err r e r rev u a y r u au e .

u aErr r u a Te ure2D e e
e ureRe ere e e re v evP r
u aC a e F r a De e e
e e e

**Parameters**

**Returns**

**Description**

devPtr texref
width height pitch
desc
texref

*offset

offset

width height

pitch

pitch

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a Te ureT Array e ureRe ere e e re u aArray array u aC a e F r a De e

**Parameters**

**Returns**

### Description

array texref desc

texref

N e a u ay a re ur err r e r rev u a y r u au e .

u aErr r
u a Te ureT M a e Array
e ureRe ere e e re u aM a e Array
a e Array u aC a e F r a De e

### Parameters

### Returns

### Description

mipmappedArray texref desc

texref

N e a u ay a re ur err r e r rev u a y r u au e .

## u aCrea eC a e De y u aC a e F r a

### Parameters

### Returns

f

### Description

f x y z w

```
struct cudaChannelFormatDesc {
        int x, y, z, w;
        enum cudaChannelFormatKind
                f;
      };
```

## u aErr r u a e C a e De u aC a e F r a De e u aArray array

**Parameters**

**Returns**

**Description**

*desc array

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e Te ureA e e e e e ureRe ere e e re

**Parameters**

### Returns

### Description

*offset texref

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e Te ureRe ere e e ureRe ere e e re v y b

### Parameters

### Returns

### Description

*texref symbol

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a var ab e a e symbol ara a er a re ve CUDA .0.

## u aErr r u aU b Te ure e ureRe ere e e re

**Parameters**

**Returns**

**Description**

texref

N e a u ay a re ur err r e r rev u a y r u au e .

## .2 . ur a e Re ere e Ma a e e

## u aErr r u a ur a eT Array
## ur a eRe ere e ur re u aArray array
## u aC a e F r a De e

**Parameters**

**Returns**

**Description**

array surfref desc

surfref

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u a e ur a eRe ere e
## ur a eRe ere e ur re v y b

**Parameters**

### Returns

### Description

*surfref
symbol

- N e a u ay a re ur err r e r rev u a y r u au e .
- U e a r a a var ab e a e symbol ara a er a re ve CUDA .0.

## .2 . Te ure b e Ma a e e

u aErr r u aCrea eTe ure b e
u aTe ure b e Te b e
u aRe ur eDe Re De u aTe ureDe
Te De u aRe ur e e De
Re e De

### Parameters

## Returns

## Description

pTexObject pResDesc
pTexDesc pResViewDesc

pResDesc
pResViewDesc

```
struct cudaResourceDesc {
        enum cudaResourceType
        resType;

        union {
            struct {
                cudaArray_t
        array;
            } array;
            struct {
                cudaMipmappedArray_t
        mipmap;
            } mipmap;
            struct {
                void *devPtr;
                struct cudaChannelFormatDesc
        desc;
                size_t sizeInBytes;
            } linear;
            struct {
                void *devPtr;
                struct cudaChannelFormatDesc
        desc;
                size_t width;
                size_t height;
                size_t pitchInBytes;
            } pitch2D;
        } res;
    };
```

▶

```
enum cudaResourceType {
        cudaResourceTypeArray          = 0x00,
        cudaResourceTypeMipmappedArray = 0x01,
        cudaResourceTypeLinear         = 0x02,
        cudaResourceTypePitch2D        = 0x03
    };
```

```
struct cudaTextureDesc {
        enum cudaTextureAddressMode
        addressMode[3];
        enum cudaTextureFilterMode
        filterMode;
        enum cudaTextureReadMode
        readMode;
        int                         sRGB;
        float                       borderColor[4];
        int                         normalizedCoords;
        unsigned int                maxAnisotropy;
        enum cudaTextureFilterMode
        mipmapFilterMode;
        float                       mipmapLevelBias;
        float                       minMipmapLevelClamp;
        float                       maxMipmapLevelClamp;
    };
```

▶

```
enum cudaTextureAddressMode {
    cudaAddressModeWrap   = 0,
    cudaAddressModeClamp  = 1,
    cudaAddressModeMirror = 2,
    cudaAddressModeBorder = 3
};
```

▶

```
enum cudaTextureFilterMode {
    cudaFilterModePoint  = 0,
    cudaFilterModeLinear = 1
};
```

▶

```
enum cudaTextureReadMode {
    cudaReadModeElementType     = 0,
    cudaReadModeNormalizedFloat = 1
};
```

▶

▶

▶

▶

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```
struct cudaResourceViewDesc {
        enum cudaResourceViewFormat
        format;
        size_t                      width;
        size_t                      height;
        size_t                      depth;
        unsigned int                firstMipmapLevel;
        unsigned int                lastMipmapLevel;
        unsigned int                firstLayer;
        unsigned int                lastLayer;
};
```

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## u aErr r u aDe r yTe ure b e u aTe ure b e e b e

**Parameters**

**Returns**

**Description**

texObject

u aErr r
u a e Te ure b e Re ur eDe u aRe ur eDe
Re De u aTe ure b e e b e

**Parameters**

**Returns**

**Description**

texObject

u aErr r
u a e Te ure b e Re ur e e De
u aRe ur e e De Re e De
u aTe ure b e e b e

**Parameters**

**Returns**

**Description**

texObject

u aErr r u a e Te ure b e Te ureDe
u aTe ureDe Te De u aTe ure b e
e b e

**Parameters**

**Returns**

**Description**

texObject

## .2 . ur a e b e Ma a e e

## u aErr r u aCrea e ur a e b e u a ur a e b e ur b e u aRe ur eDe Re De

**Parameters**

**Returns**

**Description**

pSurfObject pResDesc

## u aErr r u aDe r y ur a e b e u a ur a e b e ur b e

**Parameters**

**Returns**

**Description**

surfObject

u aErr r
u a e ur a e b e Re ur eDe u aRe ur eDe
Re De u a ur a e b e ur b e

surfObject

**Parameters**

**Returns**

**Description**

## .2 . er Ma a e e

u aErr r u aDr ver e er
r ver er

**Parameters**

### Returns

### Description

*driverVersion

driverVersion

driverVersion

N e a u ay a re ur err r e r rev u a y r u au e .

## ev e u aErr r u aRu e e er ru e er

### Parameters

### Returns

### Description

*runtimeVersion

runtimeVersion

# .28. C API R u e

nvcc

## u a u a y 2D e er

e a e a T u aErr r
u a ur a eT Array ur a eT ur
u aArray array

**Parameters**

**Returns**

**Description**

array surf
surf

N e a u ay a re ur err r e r rev u a y r u
au e .

## e a e a T u aErr r ur a eT Array ur a eT ur u aArray array u aC a e F r a De e

**Parameters**

**Returns**

**Description**

array surf desc

surf

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ure

## e e e ureT rea M e e v evP r e e

### Parameters

### Returns

### Description

size devPtr
tex offset

tex

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ure e e e ureT rea M e e

## v evP r u aC a e F r a De e e e

**Parameters**

**Returns**

**Description**

size devPtr
tex desc
offset
tex

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ure2D

# e e e ureT rea M e e v evP r e e e e

**Parameters**

**Returns**

**Description**

devPtr tex
width height pitch

tex

*offset

offset

N e a u ay a re ur err r e r rev u a y r u au e .

# e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ure2D e e e ureT rea M e e v evP r u aC a e F r a De e e e e e

**Parameters**

**Returns**

**Description**

devPtr tex width height pitch desc tex *offset

offset

N e a u ay a re ur err r e r rev u a y r u au e .

e a e a T e u
u aTe ureRea M e rea M e u aErr r
u a Te ureT Array e ureT rea M e
e u aArray array

**Parameters**

**Returns**

**Description**

array tex

tex

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ureT Array e ureT rea M e e u aArray array u aC a e F r a De e

### Parameters

### Returns

### Description

array tex desc

tex

N e a u ay a re ur err r e r rev u a y r u au e .

# e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ureT M a e Array e ureT rea M e e u aM a e Array a e Array

**Parameters**

**Returns**

**Description**

mipmappedArray tex

tex

N e a u ay a re ur err r e r rev u a y r u au e .

# e a e a T e u u aTe ureRea M e rea M e u aErr r u a Te ureT M a e Array e ureT rea M e e u aM a e Array a e Array u aC a e F r a De e

## Parameters

## Returns

## Description

mipmappedArray tex desc

tex

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aCrea eC a e De v

### Returns

f

### Description

f x y z w

```
struct cudaChannelFormatDesc {
        int x, y, z, w;
        enum cudaChannelFormatKind
                f;
      };
```

## u aErr r u aEve Crea e u aEve eve u e a

### Parameters

### Returns

### Description

- 
- 

-

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u aFu e A r bu e u aFu A r bu e a r T e ry

### Parameters

### Returns

### Description

entry

entry

entry __global__

attr

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u aFu e Ca eC T u u aFu Ca e a eC

**Parameters**

**Returns**

**Description**

cacheConfig
func

func

func

func __global__

▸
▸
▸

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T iNdhSAdCC2C}vr
## iNdhSaDv5dFy7RmmCAu re v evP r T y b

**Parameters**

**Returns**

FMRnzMFFIIDFMRn,eeNeBcrn D D D D D D D D D D▫D▫O6f▫

**Description**

*devPtr symbol symbol
symbol
symbol *devPtr

## e a e a T u aErr r
## u a e y b e e e T y b

**Parameters**

**Returns**

**Description**

*size symbol symbol
symbol symbol
*size

N e a u ay a re ur err r e r rev u a y r u
au e .

## e a e a T e u
## u aTe ureRea M e rea M e u aErr r
## u a e Te ureA e e e e
## e ureT rea M e e

**Parameters**

### Returns

### Description

*offset tex

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a au T u

### Parameters

### Returns

### Description

func func
func
__global__

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a au er e T u r D b D v ar e are Me u a rea rea

### Parameters

### Returns

### Description

func gridDim gridDim.x gridDim.y gridDim.z blockDim blockDim.x blockDim.y blockDim.z

args
args[0] args[N - 1]

sharedMem

stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- T u u e a ar e au rea e a .

## u aErr r u aMa v r e e u e a

### Parameters

### Returns

### Description

size

flags

- 
- 

- 

-

N e a u ay a re ur err r e r rev u a y r u au e .

# e a e a T u aErr r u aMa Ma a e T evP r e e u e a

**Parameters**

**Returns**

**Description**

size *devPtr

size

flags flags

flags

e a e a T u aErr r
u aMe yFr y b v T y b
e u e e u aMe y

**Parameters**

**Returns**

### Description

count offset
symbol dst
symbol kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

## e a e a T u aErr r u aMe yFr y b A y v T y b e u e e u aMe y u a rea rea

### Parameters

### Returns

### Description

count offset
symbol dst
symbol kind

stream kind
stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

## e a e a T u aErr r u aMe yT y b T y b v r e u e e u aMe y

### Parameters

### Returns

### Description

count src
offset symbol
symbol kind

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

## e a e a T u aErr r u aMe yT y b A y T y b v

# r e u e e u aMe y u a rea rea

## Parameters

## Returns

## Description

count src offset symbol symbol kind

stream kind stream

- N e a u ay a re ur err r e r rev u a y r u au e .
- T u e b a y r u be av r r u e a e .
- U e a r a a var ab e a e symbol ara a er a e re a e CUDA .1 a re ve CUDA .0.

# e a e a T u aErr r u a u a yMa A ve PerMu r e r u T u b e e y a Me e

**Parameters**

**Returns**

**Description**

*numBlocks

N e a u ay a re ur err r e r rev u a y r u au e .

# e a e a T u aErr r u a u a yMa A ve PerMu r e r F a u T u b e e y a Me e u e a

**Parameters**

**Returns**

**Description**

*numBlocks

flags

▸

▸

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a u a yMa P e a e r e b e T u e y a Me e b e

**Parameters**

func

**Returns**

### Description

*minGridSize *blocksize

N e a u ay a re ur err r e r rev u a y r u au e .

e a e y e a e U aryFu a T
u aErr r
u a u a yMa P e a e ar ab e Me
r e b e T u U aryFu
b eT Dy a Me e b e

### Parameters

func

**Returns**

**Description**

*minGridSize *blocksize

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e y e a e U aryFu a T u aErr r u a u a yMa P e a e ar ab e Me F a r e b e T u U aryFu

# b eT Dy a Me e b e u e a

### Parameters

func

### Returns

### Description

*minGridSize *blocksize

flags

▸

▸

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a u a yMa P e a e F a r e b e T u e y a Me e b e u e a

### Parameters

func

### Returns

## Description

*minGridSize *blocksize

flags

▶

▶

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a e u Ar u e T ar e e

**Parameters**

**Returns**

**Description**

size arg offset

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T u aErr r u a rea A a Me A y u a rea rea T evP r e e u e a

**Parameters**

### Returns

### Description

stream length
devPtr

devPtr

length

length

flags

flags

stream

stream

stream

stream

N e a u ay a re ur err r e r rev u a y r u au e .

## e a e a T e u u aTe ureRea M e rea M e u aErr r u aU b Te ure e ureT rea M e e

**Parameters**

**Returns**

**Description**

tex

N e a u ay a re ur err r e r rev u a y r u au e .

# .2 . I era e CUDA Dr ver API

# . 0. Pr er C r

u aErr r u aPr erl a e ar
F e ar u u F e u a u u M e
u u M e

**Parameters**

**Returns**

**Description**

configFile

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aPr er ar v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## u aErr r u aPr er v

**Returns**

**Description**

N e a u ay a re ur err r e r rev u a y r u au e .

## . 1. Da a y e u e by CUDA Ru e

ru u aC a e F r a De

ru u aDev ePr

ru u aE Fra e

ru u aE P a eDe

ru u aE e

ru u aFu A r bu e

ru u al Eve a e

ru u al Me a e

ru u aMe y DPar

ru u aMe y DPeerPar

ru u aP e P r

ru u aP erA r bu e

ru u aP

ru u aRe ur eDe

ru u aRe ur e e De

ru u aTe ureDe

ru ur a eRe ere e

ru e ureRe ere e

## e u u aC a e F r a

**Values**

## e u u aC u eM e

**Values**

## e u u aDev eA r

**Values**

## e u u aDev eP2PA r

**Values**

## e u u aE C rF r a

**Values**

## e u u aE Fra eTy e

**Values**

## e u u aE Re ur e a F a

**Values**

## e u u aErr r

**Values**

# e u u aFu Ca e

**Values**

## e u u a ra CubeFa e

**Values**

## e u u a ra Ma F a

**Values**

## e u u a ra Re erF a

**Values**

## e u u a

**Values**

## e u u aMe y

**Values**

## e u u aMe ryA v e

**Values**

## e u u aMe ryTy e

**Values**

## e u u aMe Ra eA r bu e

**Values**

## e u u a u u M e

**Values**

## e u u aRe ur eTy e

**Values**

## e u u aRe ur e e F r a

**Values**

## e u u a are Me C

**Values**

## e u u a ur a e u aryM e

**Values**

## e u u a ur a eF r a M e

**Values**

## e u u aTe ureA re M e

**Values**

## e u u aTe ureF erM e

**Values**

## e u u aTe ureRea M e

**Values**

## y e e u aArray u aArray

y e e u aArray u aArray

y e e ru CUe rea C e
u aE rea C e

y e e u aErr r

y e e ru CUeve u aEve

y e e u a ra Re ur e u a ra Re ur e

y e e u aM a e Array
u aM a e Array

y e e u aM a e Array u aM a e Array

y e e u a u u M e

y e e ru CU rea u a rea

y e e u e u a ur a e b e

y e e u e u aTe ure b e

y e e ru CUuu u aUUID

e e CUDA E MA P ANE

e e CUDA IPC AND E I E

e e u aArrayCube a 0 0

e e u aArrayDe au 0 00

e e u aArray ayere 0 01

e e u aArray ur a e a re 0 02

e e u aArrayTe ure a er 0 08

e e u aC uDev el -1

e e u aDev e y 0 0

e e u aDev e e Re eT Ma 0 10

e e u aDev eMa 0 08

e e u aDev eMa 0 1

e e u aDev ePr D Care

e e u aDev e e u eAu 0 00

e e u aDev e e u e y 0 0

e e u aDev e e u eMa 0 0

e e u aDev e e u e 0 01

e e u aDev e e u e e 0 02

e e u aEve y 0 01

e e u aEve De au 0 00

e e u aEve D ab eT 0 02

e e u aEve I er r e 0 0

e e u a A De au 0 00

e e u a A Ma e 0 02

e e u a A P r ab e 0 01

e e u a A r eC b e 0 0

e e u a Re erDe au 0 00

e e u a Re erI Me ry 0 0

e e u a Re erMa e 0 02

e e u a Re erP r ab e 0 01

e e u al va Dev el -2

e e u al Me a yE ab ePeerA e 0 01

e e u aMe A a ba 0 01

e e u aMe A a 0 02

e e u aMe A a e 0 0

e e u a u a yDe au 0 00

e e u a u a yD ab eCa verr e 0 01

e e u aPeerA e De au 0 00

e e u a rea De au 0 00

e e u a rea e a y u a rea 0 1

e e u a rea N 0 01

e e u a rea PerT rea u a rea 0 2

# C a er .
# DATA TRUCTURE

## .1. u a u a y 2D e er

# .2. u aC a e F r a De ru Re ere e

e u u aC a e F r a
u aC a e F r a De

u aC a e F r a De

u aC a e F r a De

u aC a e F r a De y

u aC a e F r a De

# . . u aDev ePr ru Re ere e

u aDev ePr a y E eC u

u aDev ePr a Ma Me ry

u aDev ePr Ra e

u aDev ePr u eM e

u aDev ePr urre er e

u aDev ePr urre Ma a e A e

u aDev ePr ev e ver a

u aDev ePr ECCE ab e

u aDev ePr ba 1Ca e u r e

u aDev ePr Na veA u r e

u aDev ePr e ra e

u aDev ePr Mu u ar

u aDev ePr er e E e T e u E ab e

u aDev ePr 2Ca e e

u aDev ePr a 1Ca e u r e

u aDev ePr a r

u aDev ePr a a e Me ry

u aDev ePr a r e

u aDev ePr a ur a e1D

u aDev ePr a ur a e1D ayere

u aDev ePr a ur a e2D

u aDev ePr a ur a e2D ayere

u aDev ePr a ur a e D

u aDev ePr a ur a eCube a

u aDev ePr a ur a eCube a ayere

u aDev ePr a Te ure1D

u aDev ePr a Te ure1D ayere

u aDev ePr a Te ure1D ear

u aDev ePr a Te ure1DM a

u aDev ePr a Te ure2D

u aDev ePr a Te ure2D a er

u aDev ePr a Te ure2D ayere

u aDev ePr a Te ure2D ear

u aDev ePr a Te ure2DM a

u aDev ePr a Te ure D

u aDev ePr a Te ure DA

u aDev ePr a Te ureCube a

u aDev ePr a Te ureCube a ayere

u aDev ePr a T rea D

u aDev ePr a T rea Per

u aDev ePr a T rea PerMu Pr e r

u aDev ePr e ry u

u aDev ePr e ryC Ra e

e u aDev ePr e P

u aDev ePr r

u aDev ePr u u ar r u lD

u aDev ePr u Pr e rC u

ar u aDev ePr a e

u aDev ePr a eab eMe ryA e

u aDev ePr u ID

u aDev ePr Dev eID

u aDev ePr D a ID

u aDev ePr re Per

u aDev ePr re PerMu r e r

e u aDev ePr are Me Per

e u aDev ePr are Me PerMu r e r

u aDev ePr eT D ub ePre Per Ra

u aDev ePr rea Pr r e u r e

e u aDev ePr ur a eA e

u aDev ePr Dr ver

e u aDev ePr e ureA e

e u aDev ePr e ureP A e

e u aDev ePr a C Me

e u aDev ePr a ba Me

u aDev ePr u e A re

u aDev ePr ar e

## . . u aE Fra e ru Re ere e

```
typedef struct cudaEglPlaneDesc_st {
          unsigned int width;
          unsigned int height;
          unsigned int depth;
          unsigned int pitch;
          unsigned int numChannels;
          struct cudaChannelFormatDesc channelDesc;
          unsigned int reserved[4];
      } cudaEglPlaneDesc;
```

u aE C rF r a u aE Fra e e C rF r a

u aE Fra eTy e u aE Fra e ra eTy e

u aArray u aE Fra e Array

u e u aE Fra e a eC u

ru u aE P a eDe u aE Fra e a eDe

ru u aP e P r u aE Fra e P

. . u aE P a eDe ru Re ere e

ru u aC a e F r a De
u aE P a eDe a e De

u e u aE P a eDe e

u e u aE P a eDe e

u e u aE P a eDe u C a e

u e u aE P a eDe

u e u aE P a eDe re erve

u e u aE P a eDe

. . u aE e ru Re ere e

e u aE e e

e u aE e e

e u aE e

# . . u aFu A r bu e ru Re ere e

u aFu A r bu e b ary er

u aFu A r bu e a eM eCA

e u aFu A r bu e e y e

e u aFu A r bu e a e y e

u aFu A r bu e a T rea Per

u aFu A r bu e u Re

u aFu A r bu e er

Da a ru ure

ru u aP u aMe y DPar r P

ru u aP e P r u aMe y DPar r P r

## .11. u aMe y DPeerPar ru Re ere e

u aArray u aMe y DPeerPar Array

u aMe y DPeerPar Dev e

ru u aP u aMe y DPeerPar P

ru u aP e P r u aMe y DPeerPar P r

ru u aE e u aMe y DPeerPar e e

u aArray u aMe y DPeerPar r Array

u aMe y DPeerPar r Dev e

ru u aP u aMe y DPeerPar r P

ru u aP e P r u aMe y DPeerPar r P r

## .12. u aP e P r ru Re ere e

e u aP e P r

v u aP e P r r

e u aP e P r e

e u aP e P r y e

## .1 . u aP erA r bu e ru Re ere e

u aP erA r bu e ev e

v u aP erA r bu e ev eP er

v u aP erA r bu e P er

u aP erA r bu e Ma a e

e u u aMe ryTy e
u aP erA r bu e e ryTy e

.1 . u aP ru Re ere e

e u aP

e u aP y

e u aP

# .1 . u aRe ur eDe ru Re ere e

u aArray u aRe ur eDe array

ru u aC a e F r a De u aRe ur eDe e

v u aRe ur eDe evP r

e u aRe ur eDe e

u aM a e Array u aRe ur eDe a

e u aRe ur eDe l y e

e u u aRe ur eTy e u aRe ur eDe re Ty e

e u aRe ur eDe el y e

e u aRe ur eDe

# .1 . u aRe ur e e De ru Re ere e

e u aRe ur e e De e

u e u aRe ur e e De r ayer

u e u aRe ur e e De r M a eve

e u u aRe ur e e F r a
u aRe ur e e De r a

e u aRe ur e e De e

u e u aRe ur e e De a ayer

u e u aRe ur e e De a M a eve

e u aRe ur e e De

# .1 . u aTe ureDe ru Re ere e

e u u aTe ureA re M e
u aTe ureDe a re M e

a u aTe ureDe b r erC r

e u u aTe ureF erM e
u aTe ureDe erM e

u e u aTe ureDe a A r y

a u aTe ureDe a M a eve C a

a u aTe ureDe M a eve C a

e u u aTe ureF erM e
u aTe ureDe a F erM e

a u aTe ureDe a eve a

u aTe ureDe r a e C r

e u u aTe ureRea M e
u aTe ureDe rea M e

u aTe ureDe R

## .18. ur a eRe ere e ru Re ere e

ru u aC a e F r a De
ur a eRe ere e a e De

## .1 . e ureRe ere e ru Re ere e

e u u aTe ureA re M e
e ureRe ere e a re M e

ru u aC a e F r a De
e ureRe ere e a e De

e u u aTe ureF erM e
e ureRe ere e erM e

u e e ureRe ere e a A r y

a e ureRe ere e a M a eve C a

a e ureRe ere e M a eve C a

e u u aTe ureF erM e
e ureRe ere e a F erM e

a e ureRe ere e a eve a

e ureRe ere e r a e

e ureRe ere e R

# C a er .
# DATA FIE D

**A**

**B**

**C**

**D**

**E**

**F**

**G**

**H**

**I**

**K**

L

M

**N**

**P**

**R**

**S**

**T**

**U**

**W**

**X**

**Y**

**Z**

# C a er .
# DEPRECATED I T

## Notice

A N IDIA DE I N PECIFICATI N REFERENCE ARD FI E DRA IN DIA N TIC I T AND T ER D CUMENT T ET ER AND EPARATE MATERIA ARE EIN PR IDED A I . N IDIA MA E N ARRANTIE E PRE ED IMP IED TATUT R R T ER I E IT RE PECT T T E MATERIA AND E PRE DI C AIM A IMP IED ARRANTIE F N NINFRIN EMENT MERC ANTA I IT AND FITNE F R A PARTICU AR PURP E.

I r a ur e be eve be a ura e a re ab e. ever N IDIA C r ra a u e re b y r e e ue e u e u r a r r a y r e e a e r er r r ar e a ay re u r u e. N e e ra e by a er e u er a y a e r N IDIA C r ra . e a e e ub a are ub e a e u e. T ub a u er e e a re a e a er r a rev u y u e . N IDIA C r ra r u are au r e a r a e e u r ev e r y e u e re r e a r va N IDIA C r ra .

## Trademarks

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