

RDC

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<b>1 Data Structure Index</b>	<b>1</b>
1.1 Data Structures	1
<b>2 File Index</b>	<b>3</b>
2.1 File List	3
<b>3 Data Structure Documentation</b>	<b>5</b>
3.1 rdc_device_attributes_t Struct Reference	5
3.1.1 Detailed Description	5
3.2 rdc_diag_detail_t Struct Reference	5
3.2.1 Detailed Description	6
3.3 rdc_diag_per_gpu_result_t Struct Reference	6
3.3.1 Detailed Description	6
3.4 rdc_diag_response_t Struct Reference	6
3.4.1 Detailed Description	6
3.5 rdc_diag_test_result_t Struct Reference	7
3.5.1 Detailed Description	7
3.5.2 Field Documentation	7
3.5.2.1 per_gpu_result_count	7
3.6 rdc_field_group_info_t Struct Reference	7
3.6.1 Detailed Description	8
3.6.2 Field Documentation	8
3.6.2.1 field_ids	8
3.7 rdc_field_value Struct Reference	8
3.7.1 Detailed Description	9
3.7.2 Field Documentation	9
3.7.2.1 value	9
3.8 rdc_field_value_data Union Reference	9
3.8.1 Detailed Description	9
3.9 rdc_gpu_usage_info_t Struct Reference	9
3.9.1 Detailed Description	10
3.10 rdc_group_info_t Struct Reference	10
3.10.1 Detailed Description	11
3.10.2 Field Documentation	11
3.10.2.1 entity_ids	11
3.11 rdc_job_group_info_t Struct Reference	11
3.11.1 Detailed Description	12
3.12 rdc_job_info_t Struct Reference	12
3.12.1 Detailed Description	12
3.12.2 Field Documentation	12
3.12.2.1 summary	12
3.13 rdc_stats_summary_t Struct Reference	12
3.13.1 Detailed Description	13

<b>4 File Documentation</b>	<b>15</b>
4.1 rdc.h File Reference	15
4.1.1 Detailed Description	19
4.1.2 Typedef Documentation	19
4.1.2.1 rdc_handle_t	19
4.1.3 Enumeration Type Documentation	20
4.1.3.1 rdc_status_t	20
4.1.3.2 rdc_group_type_t	21
4.1.3.3 rdc_field_t	21
4.1.3.4 rdc_diag_level_t	23
4.1.3.5 rdc_diag_result_t	24
4.1.3.6 rdc_diag_test_cases_t	24
4.1.4 Function Documentation	24
4.1.4.1 rdc_init()	24
4.1.4.2 rdc_shutdown()	25
4.1.4.3 rdc_start_embedded()	25
4.1.4.4 rdc_stop_embedded()	25
4.1.4.5 rdc_connect()	26
4.1.4.6 rdc_disconnect()	26
4.1.4.7 rdc_job_start_stats()	27
4.1.4.8 rdc_job_get_stats()	27
4.1.4.9 rdc_job_stop_stats()	28
4.1.4.10 rdc_job_remove()	28
4.1.4.11 rdc_job_remove_all()	29
4.1.4.12 rdc_field_update_all()	29
4.1.4.13 rdc_device_get_all()	30
4.1.4.14 rdc_device_get_attributes()	30
4.1.4.15 rdc_group_gpu_create()	30
4.1.4.16 rdc_group_gpu_add()	31
4.1.4.17 rdc_group_gpu_get_info()	32
4.1.4.18 rdc_group_get_all_ids()	32
4.1.4.19 rdc_group_gpu_destroy()	32
4.1.4.20 rdc_group_field_create()	33
4.1.4.21 rdc_group_field_get_info()	33
4.1.4.22 rdc_group_field_get_all_ids()	34
4.1.4.23 rdc_group_field_destroy()	34
4.1.4.24 rdc_field_watch()	35
4.1.4.25 rdc_field_get_latest_value()	35
4.1.4.26 rdc_field_get_value_since()	36
4.1.4.27 rdc_field_unwatch()	37
4.1.4.28 rdc_diagnostic_run()	37
4.1.4.29 rdc_test_case_run()	38

---

4.1.4.30 rdc_status_string() . . . . .	38
4.1.4.31 field_id_string() . . . . .	38
4.1.4.32 get_field_id_from_name() . . . . .	39
4.1.4.33 rdc_diagnostic_result_string() . . . . .	39

<b>Index</b>	<b>41</b>
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# Chapter 1

## Data Structure Index

### 1.1 Data Structures

Here are the data structures with brief descriptions:

<a href="#">rdc_device_attributes_t</a>	Represents attributes corresponding to a device . . . . .	5
<a href="#">rdc_diag_detail_t</a>	Details of the diagnostic errors . . . . .	5
<a href="#">rdc_diag_per_gpu_result_t</a>	Details of the per gpu diagnostic results . . . . .	6
<a href="#">rdc_diag_response_t</a>	The diagnostic responses for test cases . . . . .	6
<a href="#">rdc_diag_test_result_t</a>	The diagnostic results for all GPUs . . . . .	7
<a href="#">rdc_field_group_info_t</a>	The structure to store the field group info . . . . .	7
<a href="#">rdc_field_value</a>	The structure to store the field value . . . . .	8
<a href="#">rdc_field_value_data</a>	Field value data . . . . .	9
<a href="#">rdc_gpu_usage_info_t</a>	The structure to hold the GPU usage information . . . . .	9
<a href="#">rdc_group_info_t</a>	The structure to store the group info . . . . .	10
<a href="#">rdc_job_group_info_t</a>	The structure to store the job info . . . . .	11
<a href="#">rdc_job_info_t</a>	The structure to hold the job stats . . . . .	12
<a href="#">rdc_stats_summary_t</a>	The structure to store summary of data . . . . .	12





## Chapter 2

# File Index

### 2.1 File List

Here is a list of all documented files with brief descriptions:

[rdc.h](#)

The rocm\_rdc library api is new, and therefore subject to change either at the ABI or API level. Instead of marking every function prototype as "unstable", we are instead saying the API is unstable (i.e., changes are possible) while the major version remains 0. This means that if the API/ABI changes, we will not increment the major version to 1. Once the ABI stabilizes, we will increment the major version to 1, and thereafter increment it on all ABI breaks . . . . .

15



## Chapter 3

# Data Structure Documentation

### 3.1 rdc\_device\_attributes\_t Struct Reference

Represents attributes corresponding to a device.

```
#include <rdc.h>
```

#### Data Fields

- char [device\\_name](#) [[RDC\\_MAX\\_STR\\_LENGTH](#)]  
*Name of the device.*

#### 3.1.1 Detailed Description

Represents attributes corresponding to a device.

The documentation for this struct was generated from the following file:

- [rdc.h](#)

### 3.2 rdc\_diag\_detail\_t Struct Reference

details of the diagnostic errors

```
#include <rdc.h>
```

#### Data Fields

- char [msg](#) [[MAX\\_DIAG\\_MSG\\_LENGTH](#)]  
*The test result details.*
- uint32\_t [code](#)  
*The low level error code.*

### 3.2.1 Detailed Description

details of the diagnostic errors

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.3 rdc\_diag\_per\_gpu\_result\_t Struct Reference

details of the per gpu diagnostic results

```
#include <rdc.h>
```

### Data Fields

- [uint32\\_t gpu\\_index](#)  
*The GPU index.*
- [rdc\\_diag\\_detail\\_t gpu\\_result](#)  
*The detail results.*

### 3.3.1 Detailed Description

details of the per gpu diagnostic results

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.4 rdc\_diag\_response\_t Struct Reference

The diagnostic responses for test cases.

```
#include <rdc.h>
```

### Data Fields

- [uint32\\_t results\\_count](#)
- [rdc\\_diag\\_test\\_result\\_t diag\\_info](#) [[MAX\\_TEST\\_CASES](#)]

### 3.4.1 Detailed Description

The diagnostic responses for test cases.

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.5 rdc\_diag\_test\_result\_t Struct Reference

The diagnostic results for all GPUs.

```
#include <rdc.h>
```

### Data Fields

- [rdc\\_diag\\_result\\_t status](#)  
*The diagnostic result.*
- [rdc\\_diag\\_detail\\_t details](#)  
*The summary details.*
- [rdc\\_diag\\_test\\_cases\\_t test\\_case](#)  
*The test case to run.*
- [uint32\\_t per\\_gpu\\_result\\_count](#)  
*Result details.*
- [rdc\\_diag\\_per\\_gpu\\_result\\_t gpu\\_results](#) [RDC\_MAX\_NUM\_DEVICES]
- [char info](#) [MAX\_DIAG\_MSG\_LENGTH]  
*Detail information.*

### 3.5.1 Detailed Description

The diagnostic results for all GPUs.

### 3.5.2 Field Documentation

#### 3.5.2.1 per\_gpu\_result\_count

```
uint32_t rdc_diag_test_result_t::per_gpu_result_count
```

Result details.

How many `gpu_results`

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.6 rdc\_field\_group\_info\_t Struct Reference

The structure to store the field group info.

```
#include <rdc.h>
```

## Data Fields

- `uint32_t count`  
*count of fields in the group*
- `char group_name [RDC_MAX_STR_LENGTH]`  
*field group name*
- `rdc_field_t field_ids [RDC_MAX_FIELD_IDS_PER_FIELD_GROUP]`

### 3.6.1 Detailed Description

The structure to store the field group info.

### 3.6.2 Field Documentation

#### 3.6.2.1 field\_ids

```
rdc_field_t rdc_field_group_info_t::field_ids[RDC_MAX_FIELD_IDS_PER_FIELD_GROUP]
```

The list of fields in the group

The documentation for this struct was generated from the following file:

- `rdc.h`

## 3.7 rdc\_field\_value Struct Reference

The structure to store the field value.

```
#include <rdc.h>
```

## Data Fields

- `rdc_field_t field_id`  
*The field id of the value.*
- `int status`  
*RDC\_ST\_OK or error status.*
- `uint64_t ts`  
*Timestamp in usec since 1970.*
- `rdc_field_type_t type`  
*The field type.*
- `rdc_field_value_data value`

### 3.7.1 Detailed Description

The structure to store the field value.

### 3.7.2 Field Documentation

#### 3.7.2.1 value

```
rdc_field_value_data rdc_field_value::value
```

Value of the field. Value type depends on the field type.

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.8 rdc\_field\_value\_data Union Reference

Field value data.

```
#include <rdc.h>
```

### Data Fields

- `int64_t l_int`
- `double dbl`
- `char str [RDC_MAX_STR_LENGTH]`

### 3.8.1 Detailed Description

Field value data.

The documentation for this union was generated from the following file:

- [rdc.h](#)

## 3.9 rdc\_gpu\_usage\_info\_t Struct Reference

The structure to hold the GPU usage information.

```
#include <rdc.h>
```

## Data Fields

- [uint32\\_t gpu\\_id](#)  
*GPU\_ID\_INVALID for summary information.*
- [uint64\\_t start\\_time](#)  
*The time to start the watching.*
- [uint64\\_t end\\_time](#)  
*The time to stop the watching.*
- [uint64\\_t energy\\_consumed](#)  
*GPU Energy consumed.*
- [uint64\\_t ecc\\_correct](#)  
*Correctable errors.*
- [uint64\\_t ecc\\_uncorrect](#)  
*Uncorrectable errors.*
- [rdc\\_stats\\_summary\\_t pcie\\_tx](#)  
*Bytes sent over PCIe stats.*
- [rdc\\_stats\\_summary\\_t pcie\\_rx](#)  
*Bytes received over PCIe stats.*
- [rdc\\_stats\\_summary\\_t power\\_usage](#)  
*GPU Power usage stats.*
- [rdc\\_stats\\_summary\\_t gpu\\_clock](#)  
*GPU Clock speed stats.*
- [rdc\\_stats\\_summary\\_t memory\\_clock](#)  
*Mem. Clock speed stats.*
- [rdc\\_stats\\_summary\\_t gpu\\_utilization](#)  
*GPU Utilization stats.*
- [rdc\\_stats\\_summary\\_t gpu\\_temperature](#)  
*GPU temperature stats.*
- [uint64\\_t max\\_gpu\\_memory\\_used](#)  
*Maximum GPU memory used.*
- [rdc\\_stats\\_summary\\_t memory\\_utilization](#)  
*Memory Utilization statistics.*

### 3.9.1 Detailed Description

The structure to hold the GPU usage information.

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.10 rdc\_group\_info\_t Struct Reference

The structure to store the group info.

```
#include <rdc.h>
```



## Data Fields

- unsigned int `count`  
*count of GPUs in the group*
- char `group_name` [`RDC_MAX_STR_LENGTH`]  
*group name*
- uint32\_t `entity_ids` [`RDC_GROUP_MAX_ENTITIES`]

### 3.10.1 Detailed Description

The structure to store the group info.

### 3.10.2 Field Documentation

#### 3.10.2.1 `entity_ids`

```
uint32_t rdc_group_info_t::entity_ids[RDC_GROUP_MAX_ENTITIES]
```

The list of entities in the group

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.11 rdc\_job\_group\_info\_t Struct Reference

The structure to store the job info.

```
#include <rdc.h>
```

## Data Fields

- char `job_id` [`RDC_MAX_STR_LENGTH`]  
*job id*
- `rdc_gpu_group_t` `group_id`  
*group name*
- uint64\_t `start_time`  
*job start time*
- uint64\_t `stop_time`  
*job stop time*

### 3.11.1 Detailed Description

The structure to store the job info.

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.12 rdc\_job\_info\_t Struct Reference

The structure to hold the job stats.

```
#include <rdc.h>
```

### Data Fields

- `uint32_t num_gpus`  
*Number of GPUs used by job.*
- `rdc_gpu_usage_info_t summary`
- `rdc_gpu_usage_info_t gpus [16]`  
*Job usage summary statistics by GPU.*

### 3.12.1 Detailed Description

The structure to hold the job stats.

### 3.12.2 Field Documentation

#### 3.12.2.1 summary

```
rdc_gpu_usage_info_t rdc_job_info_t::summary
```

Job usage summary statistics (overall)

The documentation for this struct was generated from the following file:

- [rdc.h](#)

## 3.13 rdc\_stats\_summary\_t Struct Reference

The structure to store summary of data.

```
#include <rdc.h>
```

## Data Fields

- uint64\_t [max\\_value](#)  
*Maximum value measured.*
- uint64\_t [min\\_value](#)  
*Minimum value measured.*
- uint64\_t [average](#)  
*Average value measured.*
- double [standard\\_deviation](#)  
*The standard deviation.*

### 3.13.1 Detailed Description

The structure to store summary of data.

The documentation for this struct was generated from the following file:

- [rdc.h](#)



## Chapter 4

# File Documentation

### 4.1 rdc.h File Reference

The rocm\_rdc library api is new, and therefore subject to change either at the ABI or API level. Instead of marking every function prototype as "unstable", we are instead saying the API is unstable (i.e., changes are possible) while the major version remains 0. This means that if the API/ABI changes, we will not increment the major version to 1. Once the ABI stabilizes, we will increment the major version to 1, and thereafter increment it on all ABI breaks.

```
#include <stdint.h>
```

#### Data Structures

- struct [rdc\\_device\\_attributes\\_t](#)  
*Represents attributes corresponding to a device.*
- struct [rdc\\_group\\_info\\_t](#)  
*The structure to store the group info.*
- struct [rdc\\_stats\\_summary\\_t](#)  
*The structure to store summary of data.*
- struct [rdc\\_gpu\\_usage\\_info\\_t](#)  
*The structure to hold the GPU usage information.*
- struct [rdc\\_job\\_info\\_t](#)  
*The structure to hold the job stats.*
- union [rdc\\_field\\_value\\_data](#)  
*Field value data.*
- struct [rdc\\_field\\_value](#)  
*The structure to store the field value.*
- struct [rdc\\_field\\_group\\_info\\_t](#)  
*The structure to store the field group info.*
- struct [rdc\\_job\\_group\\_info\\_t](#)  
*The structure to store the job info.*
- struct [rdc\\_diag\\_detail\\_t](#)  
*details of the diagnostic errors*
- struct [rdc\\_diag\\_per\\_gpu\\_result\\_t](#)  
*details of the per gpu diagnostic results*
- struct [rdc\\_diag\\_test\\_result\\_t](#)  
*The diagnostic results for all GPUs.*
- struct [rdc\\_diag\\_response\\_t](#)  
*The diagnostic responses for test cases.*

## Macros

- `#define GPU_ID_INVALID (-1)`  
*ID used to represent an invalid GPU.*
- `#define RDC_GROUP_ALL_GPUS (-1000)`  
*Used to specify all GPUs.*
- `#define RDC_JOB_STATS_FIELDS (-1000)`  
*Used to specify all stats fields.*
- `#define RDC_MAX_STR_LENGTH 256`  
*The max rdc field string length.*
- `#define RDC_GROUP_MAX_ENTITIES 64`  
*The max entities in a group.*
- `#define RDC_MAX_NUM_DEVICES 16`  
*Max number of GPUs supported by RDC.*
- `#define RDC_MAX_FIELD_IDS_PER_FIELD_GROUP 128`  
*The max fields in a field group.*
- `#define RDC_MAX_NUM_GROUPS 64`  
*The max number of groups.*
- `#define RDC_MAX_NUM_FIELD_GROUPS 64`  
*The max number of the field groups.*
- `#define RDC_EVT_IS_NOTIF_FIELD(FIELD) ((FIELD) >= RDC_EVT_NOTIF_FIRST && (FIELD) <= RDC_EVT_NOTIF_LAST)`
- `#define MAX_TEST_CASES (RDC_DIAG_TEST_LAST - RDC_DIAG_TEST_FIRST + 1)`  
*The maximum test cases to run.*
- `#define MAX_DIAG_MSG_LENGTH 4096`  
*The maximum length of the diagnostic messages.*

## Typedefs

- `typedef void * rdc_handle_t`  
*handlers used in various rdc calls*
- `typedef uint32_t rdc_gpu_group_t`  
*GPU Group ID type.*
- `typedef uint32_t rdc_field_grp_t`  
*Field group ID type.*

## Enumerations

- `enum rdc_status_t {`  
`RDC_ST_OK = 0, RDC_ST_NOT_SUPPORTED, RDC_ST_MSI_ERROR, RDC_ST_FAIL_LOAD_MODULE,`  
`RDC_ST_INVALID_HANDLER, RDC_ST_BAD_PARAMETER, RDC_ST_NOT_FOUND, RDC_ST_CONFLICT,`  
`RDC_ST_CLIENT_ERROR, RDC_ST_ALREADY_EXIST, RDC_ST_MAX_LIMIT, RDC_ST_INSUFF_RESOURCES,`  
`RDC_ST_FILE_ERROR, RDC_ST_NO_DATA, RDC_ST_PERM_ERROR, RDC_ST_UNKNOWN_ERROR`  
`= 0xFFFFFFFF }`  
*Error codes returned by rocm\_rdc\_lib functions.*
- `enum rdc_operation_mode_t { RDC_OPERATION_MODE_AUTO = 0, RDC_OPERATION_MODE_MANUAL }`  
*rdc operation mode rdc can run in auto mode where background threads will collect metrics. When run in manual mode, the user needs to periodically call rdc\_field\_update\_all for data collection.*
- `enum rdc_group_type_t { RDC_GROUP_DEFAULT = 0, RDC_GROUP_EMPTY }`  
*type of GPU group*

- enum `rdc_field_type_t` { **INTEGER** = 0, **DOUBLE**, **STRING**, **BLOB** }  
the type stored in the filed value
- enum `rdc_field_t` {  
RDC\_FI\_INVALID = 0, RDC\_FI\_GPU\_COUNT = 1, RDC\_FI\_DEV\_NAME, RDC\_FI\_GPU\_CLOCK = 100,  
RDC\_FI\_MEM\_CLOCK, RDC\_FI\_MEMORY\_TEMP = 200, RDC\_FI\_GPU\_TEMP, RDC\_FI\_POWER\_USAGE  
= 300,  
RDC\_FI\_PCIE\_TX = 400, RDC\_FI\_PCIE\_RX, RDC\_FI\_GPU\_UTIL = 500, RDC\_FI\_GPU\_MEMORY\_USAGE,  
RDC\_FI\_GPU\_MEMORY\_TOTAL, RDC\_FI\_ECC\_CORRECT\_TOTAL = 600, RDC\_FI\_ECC\_UNCORRECT\_TOTAL,  
RDC\_FI\_ECC\_SDMA\_SEC,  
RDC\_FI\_ECC\_SDMA\_DED, RDC\_FI\_ECC\_GFX\_SEC, RDC\_FI\_ECC\_GFX\_DED, RDC\_FI\_ECC\_MMHUB\_SEC,  
RDC\_FI\_ECC\_MMHUB\_DED, RDC\_FI\_ECC\_ATHUB\_SEC, RDC\_FI\_ECC\_ATHUB\_DED, RDC\_FI\_ECC\_BIF\_SEC,  
RDC\_FI\_ECC\_BIF\_DED, RDC\_FI\_ECC\_HDP\_SEC, RDC\_FI\_ECC\_HDP\_DED, RDC\_FI\_ECC\_XGMI\_WAFL\_SEC,  
RDC\_FI\_ECC\_XGMI\_WAFL\_DED, RDC\_FI\_ECC\_DF\_SEC, RDC\_FI\_ECC\_DF\_DED, RDC\_FI\_ECC\_SMN\_SEC,  
RDC\_FI\_ECC\_SMN\_DED, RDC\_FI\_ECC\_SEM\_SEC, RDC\_FI\_ECC\_SEM\_DED, RDC\_FI\_ECC\_MP0\_SEC,  
RDC\_FI\_ECC\_MP0\_DED, RDC\_FI\_ECC\_MP1\_SEC, RDC\_FI\_ECC\_MP1\_DED, RDC\_FI\_ECC\_FUSE\_SEC,  
RDC\_FI\_ECC\_FUSE\_DED, RDC\_FI\_ECC\_UMC\_SEC, RDC\_FI\_ECC\_UMC\_DED, RDC\_FI\_PROF\_ELAPSED\_CYCLES  
= 700,  
RDC\_FI\_PROF\_ACTIVE\_WAVES, RDC\_FI\_PROF\_ACTIVE\_CYCLES, RDC\_FI\_PROF\_CU\_OCCUPANCY,  
RDC\_FI\_PROF\_CU\_UTILIZATION,  
RDC\_FI\_PROF\_FETCH\_SIZE, RDC\_FI\_PROF\_WRITE\_SIZE, RDC\_FI\_PROF\_FLOPS\_16, RDC\_FI\_PROF\_FLOPS\_32,  
RDC\_FI\_PROF\_FLOPS\_64, RDC\_FI\_PROF\_GFLOPS\_16, RDC\_FI\_PROF\_GFLOPS\_32, RDC\_FI\_PROF\_GFLOPS\_64,  
RDC\_FI\_PROF\_MEMR\_BW\_KBPNS, RDC\_FI\_PROF\_MEMW\_BW\_KBPNS, RDC\_EVNT\_XGMI\_0\_NOP\_TX  
= 1000, RDC\_EVNT\_XGMI\_0\_REQ\_TX,  
RDC\_EVNT\_XGMI\_0\_RESP\_TX, RDC\_EVNT\_XGMI\_0\_BEATS\_TX, RDC\_EVNT\_XGMI\_1\_NOP\_TX,  
RDC\_EVNT\_XGMI\_1\_REQ\_TX,  
RDC\_EVNT\_XGMI\_1\_RESP\_TX, RDC\_EVNT\_XGMI\_1\_BEATS\_TX, RDC\_EVNT\_XGMI\_0\_THRPUT =  
1500, RDC\_EVNT\_XGMI\_1\_THRPUT,  
RDC\_EVNT\_XGMI\_2\_THRPUT, RDC\_EVNT\_XGMI\_3\_THRPUT, RDC\_EVNT\_XGMI\_4\_THRPUT,  
RDC\_EVNT\_XGMI\_5\_THRPUT,  
RDC\_EVNT\_NOTIF\_VMFAULT = 2000, **RDC\_EVNT\_NOTIF\_FIRST** = RDC\_EVNT\_NOTIF\_VMFAULT,  
RDC\_EVNT\_NOTIF\_THERMAL\_THROTTLE, RDC\_EVNT\_NOTIF\_PRE\_RESET,  
RDC\_EVNT\_NOTIF\_POST\_RESET, **RDC\_EVNT\_NOTIF\_LAST** = RDC\_EVNT\_NOTIF\_POST\_RESET }  
type of diagnostic level
- enum `rdc_diag_result_t` { RDC\_DIAG\_RESULT\_PASS, RDC\_DIAG\_RESULT\_SKIP, RDC\_DIAG\_RESULT\_WARN,  
RDC\_DIAG\_RESULT\_FAIL }  
type of diagnostic result
- enum `rdc_diag_test_cases_t` {  
RDC\_DIAG\_TEST\_FIRST = 0, **RDC\_DIAG\_COMPUTE\_PROCESS** = RDC\_DIAG\_TEST\_FIRST,  
RDC\_DIAG\_COMPUTE\_QUEUE, RDC\_DIAG\_SYS\_MEM\_CHECK,  
RDC\_DIAG\_NODE\_TOPOLOGY, RDC\_DIAG\_GPU\_PARAMETERS, **RDC\_DIAG\_TEST\_LAST** = RDC\_↵  
DIAG\_GPU\_PARAMETERS }  
The test cases to run.

## Functions

- `rdc_status_t rdc_init` (uint64\_t init\_flags)  
Initialize ROCm RDC.
- `rdc_status_t rdc_shutdown` ()  
Shutdown ROCm RDC.
- `rdc_status_t rdc_start_embedded` (rdc\_operation\_mode\_t op\_mode, rdc\_handle\_t \*p\_rdc\_handle)  
Start embedded RDC agent within this process.
- `rdc_status_t rdc_stop_embedded` (rdc\_handle\_t p\_rdc\_handle)  
Stop embedded RDC agent.

- [rdc\\_status\\_t rdc\\_connect](#) (const char \*ipAndPort, [rdc\\_handle\\_t](#) \*p\_rdc\_handle, const char \*root\_ca, const char \*client\_cert, const char \*client\_key)  
*Connect to rdcd daemon.*
- [rdc\\_status\\_t rdc\\_disconnect](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle)  
*Disconnect from rdcd daemon.*
- [rdc\\_status\\_t rdc\\_job\\_start\\_stats](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) group\_id, const char job\_id[64], [uint64\\_t](#) update\_freq)  
*Request the RDC to watch the job stats.*
- [rdc\\_status\\_t rdc\\_job\\_get\\_stats](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, const char job\_id[64], [rdc\\_job\\_info\\_t](#) \*p\_job\_info)  
*Get the stats of the job using the job id.*
- [rdc\\_status\\_t rdc\\_job\\_stop\\_stats](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, const char job\_id[64])  
*Request RDC to stop watching the stats of the job.*
- [rdc\\_status\\_t rdc\\_job\\_remove](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, const char job\_id[64])  
*Request RDC to stop tracking the job given by job\_id.*
- [rdc\\_status\\_t rdc\\_job\\_remove\\_all](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle)  
*Request RDC to stop tracking all the jobs.*
- [rdc\\_status\\_t rdc\\_field\\_update\\_all](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [uint32\\_t](#) wait\_for\_update)  
*Request RDC to update all fields to be watched.*
- [rdc\\_status\\_t rdc\\_device\\_get\\_all](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [uint32\\_t](#) gpu\_index\_list[RDC\_MAX\_NUM\_DEVICES], [uint32\\_t](#) \*count)  
*Get indexes corresponding to all the devices on the system.*
- [rdc\\_status\\_t rdc\\_device\\_get\\_attributes](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [uint32\\_t](#) gpu\_index, [rdc\\_device\\_attributes\\_t](#) \*p\_rdc\_attr)  
*Gets device attributes corresponding to the gpu\_index.*
- [rdc\\_status\\_t rdc\\_group\\_gpu\\_create](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_group\\_type\\_t](#) type, const char \*group\_name, [rdc\\_gpu\\_group\\_t](#) \*p\_rdc\_group\_id)  
*Create a group contains multiple GPUs.*
- [rdc\\_status\\_t rdc\\_group\\_gpu\\_add](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) group\_id, [uint32\\_t](#) gpu\_index)  
*Add a GPU to the group.*
- [rdc\\_status\\_t rdc\\_group\\_gpu\\_get\\_info](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) p\_rdc\_group\_id, [rdc\\_group\\_info\\_t](#) \*p\_rdc\_group\_info)  
*Get information about a GPU group.*
- [rdc\\_status\\_t rdc\\_group\\_get\\_all\\_ids](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) group\_id\_list[], [uint32\\_t](#) \*count)  
*Used to get information about all GPU groups in the system.*
- [rdc\\_status\\_t rdc\\_group\\_gpu\\_destroy](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) p\_rdc\_group\_id)  
*Destroy GPU group represented by p\_rdc\_group\_id.*
- [rdc\\_status\\_t rdc\\_group\\_field\\_create](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [uint32\\_t](#) num\_field\_ids, [rdc\\_field\\_t](#) \*field\_ids, const char \*field\_group\_name, [rdc\\_field\\_grp\\_t](#) \*rdc\_field\_group\_id)  
*create a group of fields*
- [rdc\\_status\\_t rdc\\_group\\_field\\_get\\_info](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_field\\_grp\\_t](#) rdc\_field\_group\_id, [rdc\\_field\\_group\\_info\\_t](#) \*field\_group\_info)  
*Get information about a field group.*
- [rdc\\_status\\_t rdc\\_group\\_field\\_get\\_all\\_ids](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_field\\_grp\\_t](#) field\_group\_id\_list[], [uint32\\_t](#) \*count)  
*Used to get information about all field groups in the system.*
- [rdc\\_status\\_t rdc\\_group\\_field\\_destroy](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_field\\_grp\\_t](#) rdc\_field\_group\_id)  
*Destroy field group represented by rdc\_field\_group\_id.*
- [rdc\\_status\\_t rdc\\_field\\_watch](#) ([rdc\\_handle\\_t](#) p\_rdc\_handle, [rdc\\_gpu\\_group\\_t](#) group\_id, [rdc\\_field\\_grp\\_t](#) field\_group\_id, [uint64\\_t](#) update\_freq, double max\_keep\_age, [uint32\\_t](#) max\_keep\_samples)



*Request the RDC start recording updates for a given field collection.*

- `rdc_status_t rdc_field_get_latest_value (rdc_handle_t p_rdc_handle, uint32_t gpu_index, rdc_field_t field, rdc_field_value *value)`

*Request a latest cached field of a GPU.*

- `rdc_status_t rdc_field_get_value_since (rdc_handle_t p_rdc_handle, uint32_t gpu_index, rdc_field_t field, uint64_t since_time_stamp, uint64_t *next_since_time_stamp, rdc_field_value *value)`

*Request a history cached field of a GPU.*

- `rdc_status_t rdc_field_unwatch (rdc_handle_t p_rdc_handle, rdc_gpu_group_t group_id, rdc_field_grp_t field_group_id)`

*Stop record updates for a given field collection.*

- `rdc_status_t rdc_diagnostic_run (rdc_handle_t p_rdc_handle, rdc_gpu_group_t group_id, rdc_diag_level_t level, rdc_diag_response_t *response)`

*Run the diagnostic test cases.*

- `rdc_status_t rdc_test_case_run (rdc_handle_t p_rdc_handle, rdc_gpu_group_t group_id, rdc_diag_test_cases_t test_case, rdc_diag_test_result_t *result)`

*Run one diagnostic test case.*

- `const char * rdc_status_string (rdc_status_t status)`

*Get a description of a provided RDC error status.*

- `const char * field_id_string (rdc_field_t field_id)`

*Get the name of a field.*

- `rdc_field_t get_field_id_from_name (const char *name)`

*Get the field id from name.*

- `const char * rdc_diagnostic_result_string (rdc_diag_result_t result)`

*Get a description of a diagnostic result.*

## 4.1.1 Detailed Description

The rocm\_rdc library api is new, and therefore subject to change either at the ABI or API level. Instead of marking every function prototype as "unstable", we are instead saying the API is unstable (i.e., changes are possible) while the major version remains 0. This means that if the API/ABI changes, we will not increment the major version to 1. Once the ABI stabilizes, we will increment the major version to 1, and thereafter increment it on all ABI breaks.

Main header file for the ROCm RDC library. All required function, structure, enum, etc. definitions should be defined in this file.

## 4.1.2 Typedef Documentation

### 4.1.2.1 rdc\_handle\_t

```
typedef void* rdc_handle_t
```

handlers used in various rdc calls

Handle used for an RDC session

### 4.1.3 Enumeration Type Documentation

#### 4.1.3.1 `rdc_status_t`

enum `rdc_status_t`

Error codes returned by `rocm_rdc_lib` functions.

## Enumerator

RDC_ST_OK	Success.
RDC_ST_NOT_SUPPORTED	Not supported feature.
RDC_ST_MSI_ERROR	The MSI library error.
RDC_ST_FAIL_LOAD_MODULE	Fail to load the library.
RDC_ST_INVALID_HANDLER	Invalid handler.
RDC_ST_BAD_PARAMETER	A parameter is invalid.
RDC_ST_NOT_FOUND	Cannot find the value.
RDC_ST_CONFLICT	Conflict with current state.
RDC_ST_CLIENT_ERROR	The RDC client error.
RDC_ST_ALREADY_EXIST	The item already exists.
RDC_ST_MAX_LIMIT	Max limit recording for the object.
RDC_ST_INSUFF_RESOURCES	Not enough resources to complete operation
RDC_ST_FILE_ERROR	Failed to access a file.
RDC_ST_NO_DATA	Data was requested, but none was found
RDC_ST_PERM_ERROR	Insufficient permission to complete operation
RDC_ST_UNKNOWN_ERROR	Unknown error.

## 4.1.3.2 rdc\_group\_type\_t

```
enum rdc_group_type_t
```

type of GPU group

## Enumerator

RDC_GROUP_DEFAULT	All GPUs on the Node.
RDC_GROUP_EMPTY	Empty group.

## 4.1.3.3 rdc\_field\_t

```
enum rdc_field_t
```

These enums are used to specify a particular field to be retrieved.

## Enumerator

RDC_FI_INVALID	Identifier fields. Invalid field value
RDC_FI_GPU_COUNT	GPU count in the system.
RDC_FI_DEV_NAME	Name of the device.
RDC_FI_GPU_CLOCK	The current clock for the GPU.
RDC_FI_MEM_CLOCK	Clock for the memory.
RDC_FI_MEMORY_TEMP	Memory temperature for the device.

## Enumerator

RDC_FI_GPU_TEMP	Current temperature for the device.
RDC_FI_POWER_USAGE	Power usage for the device.
RDC_FI_PCIE_TX	PCIe Tx utilization information.
RDC_FI_PCIE_RX	PCIe Rx utilization information.
RDC_FI_GPU_UTIL	GPU Utilization.
RDC_FI_GPU_MEMORY_USAGE	Memory usage of the GPU instance.
RDC_FI_GPU_MEMORY_TOTAL	Total memory of the GPU instance.
RDC_FI_ECC_CORRECT_TOTAL	ECC related fields. Accumulated correctable ECC errors
RDC_FI_ECC_UNCORRECT_TOTAL	Accumulated uncorrectable ECC errors.
RDC_FI_ECC_SDMA_SEC	SDMA Single Error Correction.
RDC_FI_ECC_SDMA_DED	SDMA Double Error Detection.
RDC_FI_ECC_GFX_SEC	GFX Single Error Correction.
RDC_FI_ECC_GFX_DED	GFX Double Error Detection.
RDC_FI_ECC_MMHUB_SEC	MMHUB Single Error Correction.
RDC_FI_ECC_MMHUB_DED	MMHUB Double Error Detection.
RDC_FI_ECC_ATHUB_SEC	ATHUB Single Error Correction.
RDC_FI_ECC_ATHUB_DED	ATHUB Double Error Detection.
RDC_FI_ECC_BIF_SEC	BIF Single Error Correction.
RDC_FI_ECC_BIF_DED	BIF Double Error Detection.
RDC_FI_ECC_HDP_SEC	HDP Single Error Correction.
RDC_FI_ECC_HDP_DED	HDP Double Error Detection.
RDC_FI_ECC_XGMI_WAFL_SEC	XGMI WAFL Single Error Correction.
RDC_FI_ECC_XGMI_WAFL_DED	XGMI WAFL Double Error Detection.
RDC_FI_ECC_DF_SEC	DF Single Error Correction.
RDC_FI_ECC_DF_DED	DF Double Error Detection.
RDC_FI_ECC_SMN_SEC	SMN Single Error Correction.
RDC_FI_ECC_SMN_DED	SMN Double Error Detection.
RDC_FI_ECC_SEM_SEC	SEM Single Error Correction.
RDC_FI_ECC_SEM_DED	SEM Double Error Detection.
RDC_FI_ECC_MP0_SEC	MP0 Single Error Correction.
RDC_FI_ECC_MP0_DED	MP0 Double Error Detection.
RDC_FI_ECC_MP1_SEC	MP1 Single Error Correction.
RDC_FI_ECC_MP1_DED	MP1 Double Error Detection.
RDC_FI_ECC_FUSE_SEC	FUSE Single Error Correction.
RDC_FI_ECC_FUSE_DED	FUSE Double Error Detection.
RDC_FI_ECC_UMC_SEC	UMC Single Error Correction.
RDC_FI_ECC_UMC_DED	UMC Double Error Detection.
RDC_FI_PROF_ELAPSED_CYCLES	ROC-profiler related fields. Number of elapsed cycles over all SMs
RDC_FI_PROF_ACTIVE_WAVES	Number of Active Waves.
RDC_FI_PROF_ACTIVE_CYCLES	Number of Active Cycles.
RDC_FI_PROF_CU_OCCUPANCY	Active Waves / maximum active Waves supported.
RDC_FI_PROF_CU_UTILIZATION	Total active cycles / Total elapsed cycles.
RDC_FI_PROF_FETCH_SIZE	Number of kilobytes fetched from video memory.
RDC_FI_PROF_WRITE_SIZE	Number of kilobytes written to video memory.
RDC_FI_PROF_FLOPS_16	Number of fp16 OPS / second.
RDC_FI_PROF_FLOPS_32	Number of fp32 OPS / second.
RDC_FI_PROF_FLOPS_64	Number of fp64 OPS / second.

## Enumerator

RDC_FI_PROF_GFLOPS_16	Number of fp16 GOPS / second.
RDC_FI_PROF_GFLOPS_32	Number of fp32 GOPS / second.
RDC_FI_PROF_GFLOPS_64	Number of fp64 GOPS / second.
RDC_FI_PROF_MEMR_BW_KBPNS	HBM Read Bandwidth in kilobytes / nanosecond.
RDC_FI_PROF_MEMW_BW_KBPNS	HBM Write Bandwidth in kilobytes / nanosecond.
RDC_EVNT_XGMI_0_NOP_TX	NOPs sent to neighbor 0.
RDC_EVNT_XGMI_0_REQ_TX	Outgoing requests to neighbor 0
RDC_EVNT_XGMI_0_RESP_TX	Outgoing responses to neighbor 0
RDC_EVNT_XGMI_0_BEATS_TX	Data beats sent to neighbor 0; Each beat represents 32 bytes.  XGMI throughput can be calculated by multiplying a BEATS event such as ::RSMI_EVNT_XGMI_0_BEATS_TX by 32 and dividing by the time for which event collection occurred, ::rsmi_counter_value_t.time_running (which is in nanoseconds). To get bytes per second, multiply this value by $10^9$ .  Throughput = BEATS/time_running * $10^9$ (bytes/second)
RDC_EVNT_XGMI_1_NOP_TX	NOPs sent to neighbor 1.
RDC_EVNT_XGMI_1_REQ_TX	Outgoing requests to neighbor 1
RDC_EVNT_XGMI_1_RESP_TX	Outgoing responses to neighbor 1
RDC_EVNT_XGMI_1_BEATS_TX	Data beats sent to neighbor 1; Each beat represents 32 bytes
RDC_EVNT_XGMI_0_THRPUT	Transmit throughput to XGMI neighbor 0 in bytes/sec
RDC_EVNT_XGMI_1_THRPUT	Transmit throughput to XGMI neighbor 1 in bytes/sec
RDC_EVNT_XGMI_2_THRPUT	Transmit throughput to XGMI neighbor 2 in bytes/sec
RDC_EVNT_XGMI_3_THRPUT	Transmit throughput to XGMI neighbor 3 in bytes/sec
RDC_EVNT_XGMI_4_THRPUT	Transmit throughput to XGMI neighbor 4 in bytes/sec
RDC_EVNT_XGMI_5_THRPUT	Transmit throughput to XGMI neighbor 5 in bytes/sec
RDC_EVNT_NOTIF_VMFault	VM page fault.
RDC_EVNT_NOTIF_THERMAL_THROTTLE	Clock frequency has decreased due to temperature rise
RDC_EVNT_NOTIF_PRE_RESET	GPU reset is about to occur.
RDC_EVNT_NOTIF_POST_RESET	GPU reset just occurred.

## 4.1.3.4 rdc\_diag\_level\_t

```
enum rdc_diag_level_t
```

type of diagnostic level

## Enumerator

RDC_DIAG_LVL_INVALID	invalid level
RDC_DIAG_LVL_SHORT	take a few seconds to run
RDC_DIAG_LVL_MED	take less than 2 minutes to run
RDC_DIAG_LVL_LONG	take up to 15 minutes to run

#### 4.1.3.5 rdc\_diag\_result\_t

enum `rdc_diag_result_t`

type of diagnostic result

Enumerator

RDC_DIAG_RESULT_PASS	The diagnostic test pass.
RDC_DIAG_RESULT_SKIP	The diagnostic test skipped.
RDC_DIAG_RESULT_WARN	The diagnostic test has warnings.
RDC_DIAG_RESULT_FAIL	The diagnostic test fail.

#### 4.1.3.6 rdc\_diag\_test\_cases\_t

enum `rdc_diag_test_cases_t`

The test cases to run.

Enumerator

RDC_DIAG_TEST_FIRST	The diagnostic test pass.
RDC_DIAG_COMPUTE_QUEUE	The Compute Queue is ready.
RDC_DIAG_SYS_MEM_CHECK	Check System memory.
RDC_DIAG_NODE_TOPOLOGY	Report node topology.
RDC_DIAG_GPU_PARAMETERS	GPU parameters in range.

### 4.1.4 Function Documentation

#### 4.1.4.1 rdc\_init()

```
rdc_status_t rdc_init (
    uint64_t init_flags )
```

Initialize ROCm RDC.

When called, this initializes internal data structures, including those corresponding to sources of information that RDC provides. This must be called before `rdc_start_embedded()` or `rdc_connect()`

## Parameters

in	<i>init_flags</i>	init_flags Bit flags that tell RDC how to initialize.
----	-------------------	---

## Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

**4.1.4.2 rdc\_shutdown()**

```
rdc_status_t rdc_shutdown ( )
```

Shutdown ROCm RDC.

Do any necessary clean up.

**4.1.4.3 rdc\_start\_embedded()**

```
rdc_status_t rdc_start_embedded (
    rdc_operation_mode_t op_mode,
    rdc_handle_t * p_rdc_handle )
```

Start embedded RDC agent within this process.

The RDC is loaded as library so that it does not require rdc daemon. In this mode, the user has to periodically call [rdc\\_field\\_update\\_all\(\)](#) when op\_mode is RDC\_OPERATION\_MODE\_MANUAL, which tells RDC to collect the stats.

## Parameters

in	<i>op_mode</i>	Operation modes. When RDC_OPERATION_MODE_AUTO, RDC schedules background task to collect the stats. When RDC_OPERATION_MODE_MANUAL, the user needs to call <a href="#">rdc_field_update_all()</a> periodically.
in, out	<i>p_rdc_handle</i>	Caller provided pointer to rdc_handle_t. Upon successful call, the value will contain the handler for following API calls.

## Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

**4.1.4.4 rdc\_stop\_embedded()**

```
rdc_status_t rdc_stop_embedded (
    rdc_handle_t p_rdc_handle )
```

Stop embedded RDC agent.

Stop the embedded RDC agent, and `p_rdc_handle` becomes invalid after this call.

#### Parameters

in	<code>p_rdc_handle</code>	The RDC handler that come from <a href="#">rdc_start_embedded()</a> .
----	---------------------------	---

#### Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

#### 4.1.4.5 rdc\_connect()

```
rdc_status_t rdc_connect (
    const char * ipAndPort,
    rdc_handle_t * p_rdc_handle,
    const char * root_ca,
    const char * client_cert,
    const char * client_key )
```

Connect to rdcd daemon.

This method is used to connect to a remote stand-alone rdcd daemon.

#### Parameters

in	<code>ipAndPort</code>	The IP and port of the remote rdcd. The <code>ipAndPort</code> can be specified in this <code>x.x.x.x:yyyy</code> format, where <code>x.x.x.x</code> is the IP address and <code>yyyy</code> is the port.
in, out	<code>p_rdc_handle</code>	Caller provided pointer to <code>rdc_handle_t</code> . Upon successful call, the value will contain the handler for following API calls.
in	<code>root_ca</code>	The root CA stored in the string in pem format. Set it as <code>nullptr</code> if the communication is not encrypted.
in	<code>client_cert</code>	The client certificate stored in the string in pem format. Set it as <code>nullptr</code> if the communication is not encrypted.
in	<code>client_key</code>	The client key stored in the string in pem format. Set it as <code>nullptr</code> if the communication is not encrypted.

#### Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

#### 4.1.4.6 rdc\_disconnect()

```
rdc_status_t rdc_disconnect (
    rdc_handle_t p_rdc_handle )
```



Disconnect from rdc daemon.

Disconnect from rdc daemon, and `p_rdc_handle` becomes invalid after this call.

#### Parameters

in	<code>p_rdc_handle</code>	The RDC handler that come from <a href="#">rdc_connect()</a> .
----	---------------------------	--

#### Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

#### 4.1.4.7 `rdc_job_start_stats()`

```
rdc_status_t rdc_job_start_stats (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    const char job_id[64],
    uint64_t update_freq )
```

Request the RDC to watch the job stats.

This should be executed as part of job prologue. The summary job stats can be retrieved using [rdc\\_job\\_get\\_stats\(\)](#). In `RDC_OPERATION_MODE_MANUAL`, user must call `rdc_field_update_all(1)` at least once, before call [rdc\\_job\\_get\\_stats\(\)](#)

#### Parameters

in	<code>p_rdc_handle</code>	The RDC handler.
in	<code>group_id</code>	The group of GPUs to be watched.
in	<code>job_id</code>	The name of the job.
in	<code>update_freq</code>	How often to update this field in usec.

#### Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

#### 4.1.4.8 `rdc_job_get_stats()`

```
rdc_status_t rdc_job_get_stats (
    rdc_handle_t p_rdc_handle,
    const char job_id[64],
    rdc_job_info_t * p_job_info )
```

Get the stats of the job using the job id.

The stats can be retrieved at any point when the job is in process.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>job_id</i>	The name of the job.
in, out	<i>p_job_info</i>	Caller provided pointer to <a href="#">rdc_job_info_t</a> . Upon successful call, the value will contain the stats of the job.

## Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

4.1.4.9 `rdc_job_stop_stats()`

```
rdc_status_t rdc_job_stop_stats (
    rdc_handle_t p_rdc_handle,
    const char job_id[64] )
```

Request RDC to stop watching the stats of the job.

This should be execute as part of job epilogue. The job Id remains available to view the stats at any point. You must call `rdc_watch_job_fields()` before this call.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>job_id</i>	The name of the job.

## Return values

<a href="#">RDC_ST_OK</a>	is returned upon successful call.
---------------------------	-----------------------------------

4.1.4.10 `rdc_job_remove()`

```
rdc_status_t rdc_job_remove (
    rdc_handle_t p_rdc_handle,
    const char job_id[64] )
```

Request RDC to stop tracking the job given by `job_id`.

After this call, you will no longer be able to call [rdc\\_job\\_get\\_stats\(\)](#) on this `job_id`. But you will be able to reuse the `job_id` after this call.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>job_id</i>	The name of the job.

## Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

**4.1.4.11 rdc\_job\_remove\_all()**

```
rdc_status_t rdc_job_remove_all (
    rdc_handle_t p_rdc_handle )
```

Request RDC to stop tracking all the jobs.

After this call, you will no longer be able to call [`rdc\_job\_get\_stats\(\)`](#) on any job id. But you will be able to reuse the any previous used job id after this call.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
----	---------------------	------------------

## Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

**4.1.4.12 rdc\_field\_update\_all()**

```
rdc_status_t rdc_field_update_all (
    rdc_handle_t p_rdc_handle,
    uint32_t wait_for_update )
```

Request RDC to update all fields to be watched.

In RDC\_OPERATION\_MODE\_MANUAL, the user must call this method periodically.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>wait_for_update</i>	Whether or not to wait for the update loop to complete before returning to the caller 1=wait. 0=do not wait.

## Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

#### 4.1.4.13 rdc\_device\_get\_all()

```
rdc_status_t rdc_device_get_all (
    rdc_handle_t p_rdc_handle,
    uint32_t gpu_index_list[RDC_MAX_NUM_DEVICES],
    uint32_t * count )
```

Get indexes corresponding to all the devices on the system.

Indexes represents RDC GPU Id corresponding to each GPU on the system and is immutable during the lifespan of the engine. The list should be queried again if the engine is restarted.

##### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
out	<i>gpu_index_list</i>	Array reference to fill GPU indexes present on the system.
out	<i>count</i>	Number of GPUs returned in <i>gpu_index_list</i> .

##### Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

#### 4.1.4.14 rdc\_device\_get\_attributes()

```
rdc_status_t rdc_device_get_attributes (
    rdc_handle_t p_rdc_handle,
    uint32_t gpu_index,
    rdc_device_attributes_t * p_rdc_attr )
```

Gets device attributes corresponding to the *gpu\_index*.

Fetch the attributes, such as device name, of a GPU.

##### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>gpu_index</i>	GPU index corresponding to which the attributes should be fetched
out	<i>p_rdc_attr</i>	GPU attribute corresponding to the <i>gpu_index</i> .

##### Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

#### 4.1.4.15 rdc\_group\_gpu\_create()

```
rdc_status_t rdc_group_gpu_create (
```

```
rdc_handle_t p_rdc_handle,
rdc_group_type_t type,
const char * group_name,
rdc_gpu_group_t * p_rdc_group_id )
```

Create a group contains multiple GPUs.

This method can create a group contains multiple GPUs. Instead of executing an operation separately for each GPU, the RDC group enables the user to execute same operation on all the GPUs present in the group as a single API call.

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>type</i>	The type of the group. RDC_GROUP_DEFAULT includes all the GPUs on the node, and RDC_GROUP_EMPTY creates an empty group.
in	<i>group_name</i>	The group name specified as NULL terminated C String
in, out	<i>p_rdc_group_id</i>	Caller provided pointer to rdc_gpu_group_t. Upon successful call, the value will contain the group id for following group API calls.

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.16 rdc\_group\_gpu\_add()

```
rdc_status_t rdc_group_gpu_add (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    uint32_t gpu_index )
```

Add a GPU to the group.

This method can add a GPU to the group

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>group_id</i>	The group id to which the GPU will be added.
in	<i>gpu_index</i>	The GPU index to be added to the group.

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.17 rdc\_group\_gpu\_get\_info()

```
rdc_status_t rdc_group_gpu_get_info (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t p_rdc_group_id,
    rdc_group_info_t * p_rdc_group_info )
```

Get information about a GPU group.

Get detail information about a GPU group created by rdc\_group\_gpu\_create

##### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>p_rdc_group_id</i>	The GPU group handler created by rdc_group_gpu_create
out	<i>p_rdc_group_info</i>	The information of the GPU group p_rdc_group_id.

##### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.18 rdc\_group\_get\_all\_ids()

```
rdc_status_t rdc_group_get_all_ids (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id_list[],
    uint32_t * count )
```

Used to get information about all GPU groups in the system.

Get the list of GPU group ids in the system.

##### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
out	<i>group_id_list</i>	Array reference to fill GPU group ids in the system.
out	<i>count</i>	Number of GPU group returned in group_id_list.

##### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.19 rdc\_group\_gpu\_destroy()

```
rdc_status_t rdc_group_gpu_destroy (
```

```
rdc_handle_t p_rdc_handle,
rdc_gpu_group_t p_rdc_group_id )
```

Destroy GPU group represented by p\_rdc\_group\_id.

Delete the logic group represented by p\_rdc\_group\_id

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>p_rdc_group↵_id</i>	The group id

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.20 rdc\_group\_field\_create()

```
rdc_status_t rdc_group_field_create (
    rdc_handle_t p_rdc_handle,
    uint32_t num_field_ids,
    rdc_field_t * field_ids,
    const char * field_group_name,
    rdc_field_grp_t * rdc_field_group_id )
```

create a group of fields

The user can create a group of fields and perform an operation on a group of fields at once.

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>num_field_ids</i>	Number of field IDs that are being provided in field_ids.
in	<i>field_ids</i>	Field IDs to be added to the newly-created field group.
in	<i>field_group_name</i>	Unique name for this group of fields.
out	<i>rdc_field_group↵_id</i>	Handle to the newly-created field group

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.21 rdc\_group\_field\_get\_info()

```
rdc_status_t rdc_group_field_get_info (
```

```

rdc_handle_t p_rdc_handle,
rdc_field_grp_t rdc_field_group_id,
rdc_field_group_info_t * field_group_info )

```

Get information about a field group.

Get detail information about a field group created by `rdc_group_field_create`

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>rdc_field_group_id</i>	The field group handler created by <code>rdc_group_field_create</code>
out	<i>field_group_info</i>	The information of the field group <code>rdc_field_group_id</code> .

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.22 rdc\_group\_field\_get\_all\_ids()

```

rdc_status_t rdc_group_field_get_all_ids (
    rdc_handle_t p_rdc_handle,
    rdc_field_grp_t field_group_id_list[],
    uint32_t * count )

```

Used to get information about all field groups in the system.

Get the list of field group ids in the system.

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
out	<i>field_group_id_list</i>	Array reference to fill field group ids in the system.
out	<i>count</i>	Number of field group returned in <code>field_group_id_list</code> .

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.23 rdc\_group\_field\_destroy()

```

rdc_status_t rdc_group_field_destroy (
    rdc_handle_t p_rdc_handle,
    rdc_field_grp_t rdc_field_group_id )

```



Destroy field group represented by `rdc_field_group_id`.

Delete the logic group represented by `rdc_field_group_id`

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>rdc_field_group_id</i>	The field group id

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.24 rdc\_field\_watch()

```
rdc_status_t rdc_field_watch (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    rdc_field_grp_t field_group_id,
    uint64_t update_freq,
    double max_keep_age,
    uint32_t max_keep_samples )
```

Request the RDC start recording updates for a given field collection.

Note that the first update of the field will not occur until the next field update cycle. To force a field update cycle, user must call `rdc_field_update_all(1)`

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>group_id</i>	The group of GPUs to be watched.
in	<i>field_group_id</i>	The collection of fields to record
in	<i>update_freq</i>	How often to update fields in usec.
in	<i>max_keep_age</i>	How long to keep data for fields in seconds.
in	<i>max_keep_samples</i>	Maximum number of samples to keep. 0=no limit.

#### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.25 rdc\_field\_get\_latest\_value()

```
rdc_status_t rdc_field_get_latest_value (
    rdc_handle_t p_rdc_handle,
```

```
uint32_t gpu_index,
rdc_field_t field,
rdc_field_value * value )
```

Request a latest cached field of a GPU.

Note that the field can be cached after called `rdc_field_watch`

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>gpu_index</i>	The GPU index.
in	<i>field</i>	The field id
out	<i>value</i>	The field value got from cache.

#### Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

#### 4.1.4.26 rdc\_field\_get\_value\_since()

```
rdc_status_t rdc_field_get_value_since (
    rdc_handle_t p_rdc_handle,
    uint32_t gpu_index,
    rdc_field_t field,
    uint64_t since_time_stamp,
    uint64_t * next_since_time_stamp,
    rdc_field_value * value )
```

Request a history cached field of a GPU.

Note that the field can be cached after called `rdc_field_watch`

#### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>gpu_index</i>	The GPU index.
in	<i>field</i>	The field id
in	<i>since_time_stamp</i>	Timestamp to request values since in usec since 1970.
out	<i>next_since_time_stamp</i>	Timestamp to use for sinceTimestamp on next call to this function
out	<i>value</i>	The field value got from cache.

#### Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

## 4.1.4.27 rdc\_field\_unwatch()

```
rdc_status_t rdc_field_unwatch (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    rdc_field_grp_t field_group_id )
```

Stop record updates for a given field collection.

The cache of those fields will not be updated after this call

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>group_id</i>	The GPU group id.
in	<i>field_group_id</i>	The field group id.

## Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

## 4.1.4.28 rdc\_diagnostic\_run()

```
rdc_status_t rdc_diagnostic_run (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    rdc_diag_level_t level,
    rdc_diag_response_t * response )
```

Run the diagnostic test cases.

Run the diagnostic test cases at different levels.

## Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>group_id</i>	The GPU group id.
in	<i>level</i>	The level decides how long the test will run. The RDC_DIAG_LVL_SHORT only take a few seconds, and the the RDC_DIAG_LVL_LONG may take up to 15 minutes.
in, out	<i>response</i>	The detail results of the tests run.

## Return values

<a href="#"><i>RDC_ST_OK</i></a>	is returned upon successful call.
----------------------------------	-----------------------------------

#### 4.1.4.29 rdc\_test\_case\_run()

```
rdc_status_t rdc_test_case_run (
    rdc_handle_t p_rdc_handle,
    rdc_gpu_group_t group_id,
    rdc_diag_test_cases_t test_case,
    rdc_diag_test_result_t * result )
```

Run one diagnostic test case.

Run a specific diagnostic test case.

##### Parameters

in	<i>p_rdc_handle</i>	The RDC handler.
in	<i>group_id</i>	The GPU group id.
in	<i>test_case</i>	The test case to run.
in, out	<i>result</i>	The results of the test.

##### Return values

<i>RDC_ST_OK</i>	is returned upon successful call.
------------------	-----------------------------------

#### 4.1.4.30 rdc\_status\_string()

```
const char* rdc_status_string (
    rdc_status_t status )
```

Get a description of a provided RDC error status.

return the string in human readable format.

##### Parameters

in	<i>status</i>	The RDC status.
----	---------------	-----------------

##### Return values

<i>The</i>	string to describe the RDC status.
------------	------------------------------------

#### 4.1.4.31 field\_id\_string()

```
const char* field_id_string (
    rdc_field_t field_id )
```

Get the name of a field.

return the string in human readable format.

#### Parameters

in	<i>field</i> ↔ <i>_id</i>	The field id.
----	------------------------------	---------------

#### Return values

<i>The</i>	string to describe the field.
------------	-------------------------------

#### 4.1.4.32 get\_field\_id\_from\_name()

```
rdc_field_t get_field_id_from_name (  
    const char * name )
```

Get the field id from name.

return the field id from field name.

#### Parameters

in	<i>name</i>	The field name.
----	-------------	-----------------

#### Return values

<i>return</i>	RDC_FI_INVALID if the field name is invalid.
---------------	--

#### 4.1.4.33 rdc\_diagnostic\_result\_string()

```
const char* rdc_diagnostic_result_string (  
    rdc_diag_result_t result )
```

Get a description of a diagnostic result.

return the string in human readable format.

#### Parameters

in	<i>result</i>	The RDC diagnostic result.
----	---------------	----------------------------

**Return values**

<i>The</i>	string to describe the RDC diagnostic result.
------------	---

# Index

entity\_ids  
    rdc\_group\_info\_t, 11

field\_id\_string  
    rdc.h, 38

field\_ids  
    rdc\_field\_group\_info\_t, 8

get\_field\_id\_from\_name  
    rdc.h, 39

per\_gpu\_result\_count  
    rdc\_diag\_test\_result\_t, 7

rdc.h, 15

- field\_id\_string, 38
- get\_field\_id\_from\_name, 39
- rdc\_connect, 26
- rdc\_device\_get\_all, 29
- rdc\_device\_get\_attributes, 30
- RDC\_DIAG\_COMPUTE\_QUEUE, 24
- RDC\_DIAG\_GPU\_PARAMETERS, 24
- rdc\_diag\_level\_t, 23
- RDC\_DIAG\_LVL\_INVALID, 23
- RDC\_DIAG\_LVL\_LONG, 23
- RDC\_DIAG\_LVL\_MED, 23
- RDC\_DIAG\_LVL\_SHORT, 23
- RDC\_DIAG\_NODE\_TOPOLOGY, 24
- RDC\_DIAG\_RESULT\_FAIL, 24
- RDC\_DIAG\_RESULT\_PASS, 24
- RDC\_DIAG\_RESULT\_SKIP, 24
- rdc\_diag\_result\_t, 24
- RDC\_DIAG\_RESULT\_WARN, 24
- RDC\_DIAG\_SYS\_MEM\_CHECK, 24
- rdc\_diag\_test\_cases\_t, 24
- RDC\_DIAG\_TEST\_FIRST, 24
- rdc\_diagnostic\_result\_string, 39
- rdc\_diagnostic\_run, 37
- rdc\_disconnect, 26
- RDC\_EVNT\_NOTIF\_POST\_RESET, 23
- RDC\_EVNT\_NOTIF\_PRE\_RESET, 23
- RDC\_EVNT\_NOTIF\_THERMAL\_THROTTLE, 23
- RDC\_EVNT\_NOTIF\_VMFault, 23
- RDC\_EVNT\_XGMI\_0\_BEATS\_TX, 23
- RDC\_EVNT\_XGMI\_0\_NOP\_TX, 23
- RDC\_EVNT\_XGMI\_0\_REQ\_TX, 23
- RDC\_EVNT\_XGMI\_0\_RESP\_TX, 23
- RDC\_EVNT\_XGMI\_0\_THRPUT, 23
- RDC\_EVNT\_XGMI\_1\_BEATS\_TX, 23
- RDC\_EVNT\_XGMI\_1\_NOP\_TX, 23
- RDC\_EVNT\_XGMI\_1\_REQ\_TX, 23
- RDC\_EVNT\_XGMI\_1\_RESP\_TX, 23
- RDC\_EVNT\_XGMI\_1\_THRPUT, 23
- RDC\_EVNT\_XGMI\_2\_THRPUT, 23
- RDC\_EVNT\_XGMI\_3\_THRPUT, 23
- RDC\_EVNT\_XGMI\_4\_THRPUT, 23
- RDC\_EVNT\_XGMI\_5\_THRPUT, 23
- RDC\_FI\_DEV\_NAME, 21
- RDC\_FI\_ECC\_ATHUB\_DED, 22
- RDC\_FI\_ECC\_ATHUB\_SEC, 22
- RDC\_FI\_ECC\_BIF\_DED, 22
- RDC\_FI\_ECC\_BIF\_SEC, 22
- RDC\_FI\_ECC\_CORRECT\_TOTAL, 22
- RDC\_FI\_ECC\_DF\_DED, 22
- RDC\_FI\_ECC\_DF\_SEC, 22
- RDC\_FI\_ECC\_FUSE\_DED, 22
- RDC\_FI\_ECC\_FUSE\_SEC, 22
- RDC\_FI\_ECC\_GFX\_DED, 22
- RDC\_FI\_ECC\_GFX\_SEC, 22
- RDC\_FI\_ECC\_HDP\_DED, 22
- RDC\_FI\_ECC\_HDP\_SEC, 22
- RDC\_FI\_ECC\_MMHUB\_DED, 22
- RDC\_FI\_ECC\_MMHUB\_SEC, 22
- RDC\_FI\_ECC\_MP0\_DED, 22
- RDC\_FI\_ECC\_MP0\_SEC, 22
- RDC\_FI\_ECC\_MP1\_DED, 22
- RDC\_FI\_ECC\_MP1\_SEC, 22
- RDC\_FI\_ECC\_SDMA\_DED, 22
- RDC\_FI\_ECC\_SDMA\_SEC, 22
- RDC\_FI\_ECC\_SEM\_DED, 22
- RDC\_FI\_ECC\_SEM\_SEC, 22
- RDC\_FI\_ECC\_SMN\_DED, 22
- RDC\_FI\_ECC\_SMN\_SEC, 22
- RDC\_FI\_ECC\_UMC\_DED, 22
- RDC\_FI\_ECC\_UMC\_SEC, 22
- RDC\_FI\_ECC\_UNCORRECT\_TOTAL, 22
- RDC\_FI\_ECC\_XGMI\_WAFL\_DED, 22
- RDC\_FI\_ECC\_XGMI\_WAFL\_SEC, 22
- RDC\_FI\_GPU\_CLOCK, 21
- RDC\_FI\_GPU\_COUNT, 21
- RDC\_FI\_GPU\_MEMORY\_TOTAL, 22
- RDC\_FI\_GPU\_MEMORY\_USAGE, 22
- RDC\_FI\_GPU\_TEMP, 22
- RDC\_FI\_GPU\_UTIL, 22
- RDC\_FI\_INVALID, 21
- RDC\_FI\_MEM\_CLOCK, 21
- RDC\_FI\_MEMORY\_TEMP, 21
- RDC\_FI\_PCIE\_RX, 22
- RDC\_FI\_PCIE\_TX, 22

RDC\_FI\_POWER\_USAGE, 22  
 RDC\_FI\_PROF\_ACTIVE\_CYCLES, 22  
 RDC\_FI\_PROF\_ACTIVE\_WAVES, 22  
 RDC\_FI\_PROF\_CU\_OCCUPANCY, 22  
 RDC\_FI\_PROF\_CU\_UTILIZATION, 22  
 RDC\_FI\_PROF\_ELAPSED\_CYCLES, 22  
 RDC\_FI\_PROF\_FETCH\_SIZE, 22  
 RDC\_FI\_PROF\_FLOPS\_16, 22  
 RDC\_FI\_PROF\_FLOPS\_32, 22  
 RDC\_FI\_PROF\_FLOPS\_64, 22  
 RDC\_FI\_PROF\_GFLOPS\_16, 23  
 RDC\_FI\_PROF\_GFLOPS\_32, 23  
 RDC\_FI\_PROF\_GFLOPS\_64, 23  
 RDC\_FI\_PROF\_MEMR\_BW\_KBPNS, 23  
 RDC\_FI\_PROF\_MEMW\_BW\_KBPNS, 23  
 RDC\_FI\_PROF\_WRITE\_SIZE, 22  
 rdc\_field\_get\_latest\_value, 35  
 rdc\_field\_get\_value\_since, 36  
 rdc\_field\_t, 21  
 rdc\_field\_unwatch, 36  
 rdc\_field\_update\_all, 29  
 rdc\_field\_watch, 35  
 RDC\_GROUP\_DEFAULT, 21  
 RDC\_GROUP\_EMPTY, 21  
 rdc\_group\_field\_create, 33  
 rdc\_group\_field\_destroy, 34  
 rdc\_group\_field\_get\_all\_ids, 34  
 rdc\_group\_field\_get\_info, 33  
 rdc\_group\_get\_all\_ids, 32  
 rdc\_group\_gpu\_add, 31  
 rdc\_group\_gpu\_create, 30  
 rdc\_group\_gpu\_destroy, 32  
 rdc\_group\_gpu\_get\_info, 31  
 rdc\_group\_type\_t, 21  
 rdc\_handle\_t, 19  
 rdc\_init, 24  
 rdc\_job\_get\_stats, 27  
 rdc\_job\_remove, 28  
 rdc\_job\_remove\_all, 29  
 rdc\_job\_start\_stats, 27  
 rdc\_job\_stop\_stats, 28  
 rdc\_shutdown, 25  
 RDC\_ST\_ALREADY\_EXIST, 21  
 RDC\_ST\_BAD\_PARAMETER, 21  
 RDC\_ST\_CLIENT\_ERROR, 21  
 RDC\_ST\_CONFLICT, 21  
 RDC\_ST\_FAIL\_LOAD\_MODULE, 21  
 RDC\_ST\_FILE\_ERROR, 21  
 RDC\_ST\_INSUFF\_RESOURCES, 21  
 RDC\_ST\_INVALID\_HANDLER, 21  
 RDC\_ST\_MAX\_LIMIT, 21  
 RDC\_ST\_MSI\_ERROR, 21  
 RDC\_ST\_NO\_DATA, 21  
 RDC\_ST\_NOT\_FOUND, 21  
 RDC\_ST\_NOT\_SUPPORTED, 21  
 RDC\_ST\_OK, 21  
 RDC\_ST\_PERM\_ERROR, 21  
 RDC\_ST\_UNKNOWN\_ERROR, 21  
 rdc\_start\_embedded, 25  
 rdc\_status\_string, 38  
 rdc\_status\_t, 20  
 rdc\_stop\_embedded, 25  
 rdc\_test\_case\_run, 37  
 rdc\_connect  
     rdc.h, 26  
 rdc\_device\_attributes\_t, 5  
 rdc\_device\_get\_all  
     rdc.h, 29  
 rdc\_device\_get\_attributes  
     rdc.h, 30  
 RDC\_DIAG\_COMPUTE\_QUEUE  
     rdc.h, 24  
 rdc\_diag\_detail\_t, 5  
 RDC\_DIAG\_GPU\_PARAMETERS  
     rdc.h, 24  
 rdc\_diag\_level\_t  
     rdc.h, 23  
 RDC\_DIAG\_LVL\_INVALID  
     rdc.h, 23  
 RDC\_DIAG\_LVL\_LONG  
     rdc.h, 23  
 RDC\_DIAG\_LVL\_MED  
     rdc.h, 23  
 RDC\_DIAG\_LVL\_SHORT  
     rdc.h, 23  
 RDC\_DIAG\_NODE\_TOPOLOGY  
     rdc.h, 24  
 rdc\_diag\_per\_gpu\_result\_t, 6  
 rdc\_diag\_response\_t, 6  
 RDC\_DIAG\_RESULT\_FAIL  
     rdc.h, 24  
 RDC\_DIAG\_RESULT\_PASS  
     rdc.h, 24  
 RDC\_DIAG\_RESULT\_SKIP  
     rdc.h, 24  
 rdc\_diag\_result\_t  
     rdc.h, 24  
 RDC\_DIAG\_RESULT\_WARN  
     rdc.h, 24  
 RDC\_DIAG\_SYS\_MEM\_CHECK  
     rdc.h, 24  
 rdc\_diag\_test\_cases\_t  
     rdc.h, 24  
 RDC\_DIAG\_TEST\_FIRST  
     rdc.h, 24  
 rdc\_diag\_test\_result\_t, 7  
     per\_gpu\_result\_count, 7  
 rdc\_diagnostic\_result\_string  
     rdc.h, 39  
 rdc\_diagnostic\_run  
     rdc.h, 37  
 rdc\_disconnect  
     rdc.h, 26  
 RDC\_EVNT\_NOTIF\_POST\_RESET  
     rdc.h, 23  
 RDC\_EVNT\_NOTIF\_PRE\_RESET



rdc.h, [23](#)  
RDC\_EVNT\_NOTIF\_THERMAL\_THROTTLE  
rdc.h, [23](#)  
RDC\_EVNT\_NOTIF\_VMFault  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_0\_BEATS\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_0\_NOP\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_0\_REQ\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_0\_RESP\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_0\_THRPUT  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_1\_BEATS\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_1\_NOP\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_1\_REQ\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_1\_RESP\_TX  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_1\_THRPUT  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_2\_THRPUT  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_3\_THRPUT  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_4\_THRPUT  
rdc.h, [23](#)  
RDC\_EVNT\_XGMI\_5\_THRPUT  
rdc.h, [23](#)  
RDC\_FI\_DEV\_NAME  
rdc.h, [21](#)  
RDC\_FI\_ECC\_ATHUB\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_ATHUB\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_BIF\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_BIF\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_CORRECT\_TOTAL  
rdc.h, [22](#)  
RDC\_FI\_ECC\_DF\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_DF\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_FUSE\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_FUSE\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_GFX\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_GFX\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_HDP\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_HDP\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MMHUB\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MMHUB\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MP0\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MP0\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MP1\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_MP1\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SDMA\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SDMA\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SEM\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SEM\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SMN\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_SMN\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_UMC\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_UMC\_SEC  
rdc.h, [22](#)  
RDC\_FI\_ECC\_UNCORRECT\_TOTAL  
rdc.h, [22](#)  
RDC\_FI\_ECC\_XGMI\_WAFL\_DED  
rdc.h, [22](#)  
RDC\_FI\_ECC\_XGMI\_WAFL\_SEC  
rdc.h, [22](#)  
RDC\_FI\_GPU\_CLOCK  
rdc.h, [21](#)  
RDC\_FI\_GPU\_COUNT  
rdc.h, [21](#)  
RDC\_FI\_GPU\_MEMORY\_TOTAL  
rdc.h, [22](#)  
RDC\_FI\_GPU\_MEMORY\_USAGE  
rdc.h, [22](#)  
RDC\_FI\_GPU\_TEMP  
rdc.h, [22](#)  
RDC\_FI\_GPU\_UTIL  
rdc.h, [22](#)  
RDC\_FI\_INVALID  
rdc.h, [21](#)  
RDC\_FI\_MEM\_CLOCK  
rdc.h, [21](#)  
RDC\_FI\_MEMORY\_TEMP  
rdc.h, [21](#)  
RDC\_FI\_PCIE\_RX  
rdc.h, [22](#)  
RDC\_FI\_PCIE\_TX

- rdc.h, [22](#)
- RDC\_FI\_POWER\_USAGE
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_ACTIVE\_CYCLES
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_ACTIVE\_WAVES
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_CU\_OCCUPANCY
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_CU\_UTILIZATION
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_ELAPSED\_CYCLES
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_FETCH\_SIZE
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_FLOPS\_16
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_FLOPS\_32
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_FLOPS\_64
  - rdc.h, [22](#)
- RDC\_FI\_PROF\_GFLOPS\_16
  - rdc.h, [23](#)
- RDC\_FI\_PROF\_GFLOPS\_32
  - rdc.h, [23](#)
- RDC\_FI\_PROF\_GFLOPS\_64
  - rdc.h, [23](#)
- RDC\_FI\_PROF\_MEMR\_BW\_KBPNS
  - rdc.h, [23](#)
- RDC\_FI\_PROF\_MEMW\_BW\_KBPNS
  - rdc.h, [23](#)
- RDC\_FI\_PROF\_WRITE\_SIZE
  - rdc.h, [22](#)
- rdc\_field\_get\_latest\_value
  - rdc.h, [35](#)
- rdc\_field\_get\_value\_since
  - rdc.h, [36](#)
- rdc\_field\_group\_info\_t, [7](#)
  - field\_ids, [8](#)
- rdc\_field\_t
  - rdc.h, [21](#)
- rdc\_field\_unwatch
  - rdc.h, [36](#)
- rdc\_field\_update\_all
  - rdc.h, [29](#)
- rdc\_field\_value, [8](#)
  - value, [9](#)
- rdc\_field\_value\_data, [9](#)
- rdc\_field\_watch
  - rdc.h, [35](#)
- rdc\_gpu\_usage\_info\_t, [9](#)
- RDC\_GROUP\_DEFAULT
  - rdc.h, [21](#)
- RDC\_GROUP\_EMPTY
  - rdc.h, [21](#)
- rdc\_group\_field\_create
  - rdc.h, [33](#)
- rdc\_group\_field\_destroy
  - rdc.h, [34](#)
- rdc\_group\_field\_get\_all\_ids
  - rdc.h, [34](#)
- rdc\_group\_field\_get\_info
  - rdc.h, [33](#)
- rdc\_group\_get\_all\_ids
  - rdc.h, [32](#)
- rdc\_group\_gpu\_add
  - rdc.h, [31](#)
- rdc\_group\_gpu\_create
  - rdc.h, [30](#)
- rdc\_group\_gpu\_destroy
  - rdc.h, [32](#)
- rdc\_group\_gpu\_get\_info
  - rdc.h, [31](#)
- rdc\_group\_info\_t, [10](#)
  - entity\_ids, [11](#)
- rdc\_group\_type\_t
  - rdc.h, [21](#)
- rdc\_handle\_t
  - rdc.h, [19](#)
- rdc\_init
  - rdc.h, [24](#)
- rdc\_job\_get\_stats
  - rdc.h, [27](#)
- rdc\_job\_group\_info\_t, [11](#)
- rdc\_job\_info\_t, [12](#)
  - summary, [12](#)
- rdc\_job\_remove
  - rdc.h, [28](#)
- rdc\_job\_remove\_all
  - rdc.h, [29](#)
- rdc\_job\_start\_stats
  - rdc.h, [27](#)
- rdc\_job\_stop\_stats
  - rdc.h, [28](#)
- rdc\_shutdown
  - rdc.h, [25](#)
- RDC\_ST\_ALREADY\_EXIST
  - rdc.h, [21](#)
- RDC\_ST\_BAD\_PARAMETER
  - rdc.h, [21](#)
- RDC\_ST\_CLIENT\_ERROR
  - rdc.h, [21](#)
- RDC\_ST\_CONFLICT
  - rdc.h, [21](#)
- RDC\_ST\_FAIL\_LOAD\_MODULE
  - rdc.h, [21](#)
- RDC\_ST\_FILE\_ERROR
  - rdc.h, [21](#)
- RDC\_ST\_INSUFF\_RESOURCES
  - rdc.h, [21](#)
- RDC\_ST\_INVALID\_HANDLER
  - rdc.h, [21](#)
- RDC\_ST\_MAX\_LIMIT
  - rdc.h, [21](#)
- RDC\_ST\_MSI\_ERROR
  - rdc.h, [21](#)

RDC\_ST\_NO\_DATA  
    rdc.h, [21](#)  
RDC\_ST\_NOT\_FOUND  
    rdc.h, [21](#)  
RDC\_ST\_NOT\_SUPPORTED  
    rdc.h, [21](#)  
RDC\_ST\_OK  
    rdc.h, [21](#)  
RDC\_ST\_PERM\_ERROR  
    rdc.h, [21](#)  
RDC\_ST\_UNKNOWN\_ERROR  
    rdc.h, [21](#)  
rdc\_start\_embedded  
    rdc.h, [25](#)  
rdc\_stats\_summary\_t, [12](#)  
rdc\_status\_string  
    rdc.h, [38](#)  
rdc\_status\_t  
    rdc.h, [20](#)  
rdc\_stop\_embedded  
    rdc.h, [25](#)  
rdc\_test\_case\_run  
    rdc.h, [37](#)  
  
summary  
    rdc\_job\_info\_t, [12](#)  
  
value  
    rdc\_field\_value, [9](#)