

CLD

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Contents

1	Data Structure Index	1
1.1	Data Structures	1
2	File Index	3
2.1	File List	3
3	Data Structure Documentation	5
3.1	cld_dirent_cur Struct Reference	5
3.1.1	Field Documentation	5
3.1.1.1	p	5
3.1.1.2	tmp_len	5
3.2	cld_timer Struct Reference	6
3.2.1	Field Documentation	6
3.2.1.1	cb	6
3.2.1.2	expires	6
3.2.1.3	fired	6
3.2.1.4	name	6
3.2.1.5	on_list	6
3.2.1.6	userdata	6
3.3	cld_timer_list Struct Reference	7
3.3.1	Field Documentation	7
3.3.1.1	list	7
3.4	cldc_call_opts Struct Reference	8
3.4.1	Detailed Description	8
3.4.2	Field Documentation	8
3.4.2.1	cb	8
3.4.2.2	private	8
3.4.2.3	resp	8
3.5	cldc_fh Struct Reference	9

3.5.1	Detailed Description	9
3.5.2	Field Documentation	9
3.5.2.1	fh	9
3.5.2.2	sess	9
3.5.2.3	valid	9
3.6	cldc_host Struct Reference	10
3.6.1	Detailed Description	10
3.6.2	Field Documentation	10
3.6.2.1	host	10
3.6.2.2	port	10
3.6.2.3	prio	10
3.6.2.4	weight	10
3.7	cldc_msg Struct Reference	11
3.7.1	Detailed Description	11
3.7.2	Field Documentation	11
3.7.2.1	cb	11
3.7.2.2	cb_private	11
3.7.2.3	copts	11
3.7.2.4	done	11
3.7.2.5	expire_time	11
3.7.2.6	n_pkts	11
3.7.2.7	op	11
3.7.2.8	pkt_info	11
3.7.2.9	sess	11
3.7.2.10	xid	11
3.8	cldc_node_metadata Struct Reference	12
3.8.1	Field Documentation	12
3.8.1.1	flags	12
3.8.1.2	inode_name	12
3.8.1.3	inum	12
3.8.1.4	time_create	12
3.8.1.5	time_modify	12
3.8.1.6	vers	12
3.9	cldc_ops Struct Reference	13
3.9.1	Detailed Description	13
3.9.2	Field Documentation	13

3.9.2.1	event	13
3.9.2.2	pkt_send	13
3.9.2.3	timer_ctl	13
3.10	cldc_pkt_info Struct Reference	14
3.10.1	Field Documentation	14
3.10.1.1	data	14
3.10.1.2	hdr_len	14
3.10.1.3	pkt_len	14
3.10.1.4	retries	14
3.10.1.5	user	14
3.11	cldc_session Struct Reference	15
3.11.1	Detailed Description	15
3.11.2	Field Documentation	16
3.11.2.1	addr	16
3.11.2.2	addr_len	16
3.11.2.3	confirmed	16
3.11.2.4	expire_time	16
3.11.2.5	expired	16
3.11.2.6	fh	16
3.11.2.7	inode_name_temp	16
3.11.2.8	log	16
3.11.2.9	msg_buf	16
3.11.2.10	msg_buf_len	16
3.11.2.11	msg_buf_op	16
3.11.2.12	msg_scan_time	16
3.11.2.13	next_seqid_in	16
3.11.2.14	next_seqid_in_tr	16
3.11.2.15	next_seqid_out	16
3.11.2.16	ops	16
3.11.2.17	out_msg	16
3.11.2.18	payload	16
3.11.2.19	private	16
3.11.2.20	secret_key	16
3.11.2.21	sid	16
3.11.2.22	user	16
3.12	cldc_udp Struct Reference	17

3.12.1 Detailed Description	17
3.12.2 Field Documentation	17
3.12.2.1 addr	17
3.12.2.2 addr_len	17
3.12.2.3 cb	17
3.12.2.4 cb_private	17
3.12.2.5 fd	17
3.12.2.6 sess	17
3.13 hail_log Struct Reference	18
3.13.1 Field Documentation	18
3.13.1.1 debug	18
3.13.1.2 func	18
3.13.1.3 verbose	18
3.14 ncld_fh Struct Reference	19
3.14.1 Field Documentation	19
3.14.1.1 errc	19
3.14.1.2 event_arg	19
3.14.1.3 event_func	19
3.14.1.4 event_mask	19
3.14.1.5 fh	19
3.14.1.6 is_open	19
3.14.1.7 nios	19
3.14.1.8 sess	19
3.15 ncld_read Struct Reference	20
3.15.1 Field Documentation	20
3.15.1.1 errc	20
3.15.1.2 fh	20
3.15.1.3 is_done	20
3.15.1.4 length	20
3.15.1.5 meta	20
3.15.1.6 ptr	20
3.16 ncld_sess Struct Reference	21
3.16.1 Field Documentation	22
3.16.1.1 cond	22
3.16.1.2 errc	22
3.16.1.3 event	22

3.16.1.4	event_arg	22
3.16.1.5	handles	22
3.16.1.6	host	22
3.16.1.7	is_up	22
3.16.1.8	mutex	22
3.16.1.9	open_done	22
3.16.1.10	port	22
3.16.1.11	thread	22
3.16.1.12	tlist	22
3.16.1.13	to_thread	22
3.16.1.14	udp	22
3.16.1.15	udp_timer	22
4	File Documentation	23
4.1	include/cld-private.h File Reference	23
4.2	include/cld_common.h File Reference	24
4.2.1	Define Documentation	25
4.2.1.1	CLD_ALIGN8	25
4.2.1.2	CLD_PKT_FTR_LEN	25
4.2.1.3	PKT_HDR_TO_STR_SCRATCH_LEN	25
4.2.1.4	SIDARG	25
4.2.1.5	SIDFMT	25
4.2.2	Function Documentation	25
4.2.2.1	__attribute__	25
4.2.2.2	__cld_authcheck	25
4.2.2.3	__cld_authsign	25
4.2.2.4	__cld_dump_buf	25
4.2.2.5	__cld_opstr	25
4.2.2.6	__cld_pkt_hdr_to_str	25
4.2.2.7	__cld_rand64	25
4.2.2.8	cld_errstr	25
4.2.2.9	cld_readport	25
4.2.2.10	cld_sid2llu	25
4.2.2.11	cld_timer_add	25
4.2.2.12	cld_timer_del	25
4.2.2.13	cld_timers_run	25
4.3	include/cldc.h File Reference	26

4.3.1	Function Documentation	29
4.3.1.1	cldc_close	29
4.3.1.2	cldc_copts_get_data	29
4.3.1.3	cldc_copts_get_metadata	29
4.3.1.4	cldc_del	29
4.3.1.5	cldc_dirent_count	29
4.3.1.6	cldc_dirent_cur_fini	29
4.3.1.7	cldc_dirent_cur_init	29
4.3.1.8	cldc_dirent_first	29
4.3.1.9	cldc_dirent_name	29
4.3.1.10	cldc_dirent_next	29
4.3.1.11	cldc_end_sess	29
4.3.1.12	cldc_get	29
4.3.1.13	cldc_getaddr	29
4.3.1.14	cldc_init	29
4.3.1.15	cldc_kill_sess	29
4.3.1.16	cldc_lock	29
4.3.1.17	cldc_new_sess	29
4.3.1.18	cldc_nop	29
4.3.1.19	cldc_open	29
4.3.1.20	cldc_put	29
4.3.1.21	cldc_receive_pkt	29
4.3.1.22	cldc_saveaddr	30
4.3.1.23	cldc_udp_free	30
4.3.1.24	cldc_udp_new	30
4.3.1.25	cldc_udp_pkt_send	30
4.3.1.26	cldc_udp_receive_pkt	30
4.3.1.27	cldc_unlock	30
4.4	include/hail_log.h File Reference	31
4.4.1	Define Documentation	31
4.4.1.1	ATTR_PRINTF	31
4.4.1.2	HAIL_CRIT	31
4.4.1.3	HAIL_DEBUG	31
4.4.1.4	HAIL_ERR	32
4.4.1.5	HAIL_INFO	32
4.4.1.6	HAIL_VERBOSE	32

4.4.1.7	HAIL_WARN	32
4.5	include/ncld.h File Reference	33
4.5.1	Function Documentation	34
4.5.1.1	ncld_close	34
4.5.1.2	ncld_del	34
4.5.1.3	ncld_get	34
4.5.1.4	ncld_get_meta	34
4.5.1.5	ncld_init	34
4.5.1.6	ncld_open	34
4.5.1.7	ncld_qlock	34
4.5.1.8	ncld_read_free	34
4.5.1.9	ncld_sess_close	34
4.5.1.10	ncld_sess_open	34
4.5.1.11	ncld_trylock	34
4.5.1.12	ncld_unlock	34
4.5.1.13	ncld_write	34

Chapter 1

Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

cld_dirent_cur	5
cld_timer	6
cld_timer_list	7
cldc_call_opts (Per-operation application options)	8
cldc_fh (Open file handle associated with a session)	9
cldc_host (Information for a single CLD server host)	10
cldc_msg (Outgoing message, from client to server)	11
cldc_node_metadata	12
cldc_ops (Application-supplied facilities)	13
cldc_pkt_info	14
cldc_session (Single CLD client session)	15
cldc_udp (A UDP implementation of the CLD client protocol)	17
hail_log	18
nclد_fh	19
nclد_read	20
nclد_sess	21

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

include/cld-private.h	23
include/cld_common.h	24
include/cldc.h	26
include/hail_log.h	31
include/ncld.h	33

Chapter 3

Data Structure Documentation

3.1 cld_dirent_cur Struct Reference

```
#include <cldc.h>
```

Data Fields

- const void * [p](#)
- size_t [tmp_len](#)

3.1.1 Field Documentation

3.1.1.1 const void* cld_dirent_cur::p

3.1.1.2 size_t cld_dirent_cur::tmp_len

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

- include/[cldc.h](#)

3.2 cld_timer Struct Reference

```
#include <cld_common.h>
```

Data Fields

- bool [fired](#)
- bool [on_list](#)
- void(* [cb](#))(struct [cld_timer](#) *)
- void * [userdata](#)
- time_t [expires](#)
- char [name](#) [32]

3.2.1 Field Documentation

3.2.1.1 void(* [cld_timer::cb](#))(struct [cld_timer](#) *)

3.2.1.2 time_t [cld_timer::expires](#)

3.2.1.3 bool [cld_timer::fired](#)

3.2.1.4 char [cld_timer::name](#)[32]

3.2.1.5 bool [cld_timer::on_list](#)

3.2.1.6 void* [cld_timer::userdata](#)

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

- include/[cld_common.h](#)

3.3 cld_timer_list Struct Reference

```
#include <cld_common.h>
```

Data Fields

- void * [list](#)

3.3.1 Field Documentation

3.3.1.1 void* cld_timer_list::list

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

- include/[cld_common.h](#)

3.4 cldc_call_opts Struct Reference

per-operation application options

```
#include <cldc.h>
```

Data Fields

- `int(* cb)(struct cldc_call_opts *, enum cle_err_codes)`
- `void * private`
- `struct cld_msg_get_resp resp`

3.4.1 Detailed Description

per-operation application options

3.4.2 Field Documentation

3.4.2.1 `int(* cldc_call_opts::cb)(struct cldc_call_opts *, enum cle_err_codes)`

3.4.2.2 `void* cldc_call_opts::private`

3.4.2.3 `struct cld_msg_get_resp cldc_call_opts::resp`

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

- `include/cldc.h`

3.5 cldc_fh Struct Reference

an open file handle associated with a session

```
#include <cldc.h>
```

Data Fields

- uint64_t [fh](#)
- struct [cldc_session](#) * [sess](#)
- bool [valid](#)

3.5.1 Detailed Description

an open file handle associated with a session

3.5.2 Field Documentation

3.5.2.1 `uint64_t cldc_fh::fh`

3.5.2.2 `struct cldc_session* cldc_fh::sess`

3.5.2.3 `bool cldc_fh::valid`

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

- `include/cldc.h`

3.6 cldc_host Struct Reference

Information for a single CLD server host.

```
#include <cldc.h>
```

Data Fields

- unsigned int [prio](#)
- unsigned int [weight](#)
- char * [host](#)
- unsigned short [port](#)

3.6.1 Detailed Description

Information for a single CLD server host.

3.6.2 Field Documentation

3.6.2.1 char* cldc_host::host

3.6.2.2 unsigned short cldc_host::port

3.6.2.3 unsigned int cldc_host::prio

3.6.2.4 unsigned int cldc_host::weight

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

- include/[cldc.h](#)

3.7 cldc_msg Struct Reference

an outgoing message, from client to server

```
#include <cldc.h>
```

Data Fields

- uint64_t [xid](#)
- enum [cld_msg_op](#) [op](#)
- struct [cldc_session](#) * [sess](#)
- ssize_t(* [cb](#))(struct [cldc_msg](#) *, const void *, size_t, enum [cle_err_codes](#))
- void * [cb_private](#)
- struct [cldc_call_opts](#) [copts](#)
- bool [done](#)
- time_t [expire_time](#)
- int [n_pkts](#)
- struct [cldc_pkt_info](#) * [pkt_info](#) [0]

3.7.1 Detailed Description

an outgoing message, from client to server

3.7.2 Field Documentation

3.7.2.1 `ssize_t(* cldc_msg::cb)(struct cldc_msg *, const void *, size_t, enum cle_err_codes)`

3.7.2.2 `void* cldc_msg::cb_private`

3.7.2.3 `struct cldc_call_opts cldc_msg::copts`

3.7.2.4 `bool cldc_msg::done`

3.7.2.5 `time_t cldc_msg::expire_time`

3.7.2.6 `int cldc_msg::n_pkts`

3.7.2.7 `enum cld_msg_op cldc_msg::op`

3.7.2.8 `struct cldc_pkt_info* cldc_msg::pkt_info[0]`

3.7.2.9 `struct cldc_session* cldc_msg::sess`

3.7.2.10 `uint64_t cldc_msg::xid`

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

- [include/cldc.h](#)

3.8 cldc_node_metadata Struct Reference

```
#include <cldc.h>
```

Data Fields

- quad_t [inum](#)
- quad_t [vers](#)
- quad_t [time_create](#)
- quad_t [time_modify](#)
- int [flags](#)
- const char * [inode_name](#)

3.8.1 Field Documentation

3.8.1.1 int cldc_node_metadata::flags

3.8.1.2 const char* cldc_node_metadata::inode_name

3.8.1.3 quad_t cldc_node_metadata::inum

3.8.1.4 quad_t cldc_node_metadata::time_create

3.8.1.5 quad_t cldc_node_metadata::time_modify

3.8.1.6 quad_t cldc_node_metadata::vers

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

- [include/cldc.h](#)

3.9 cldc_ops Struct Reference

application-supplied facilities

```
#include <cldc.h>
```

Data Fields

- `bool(* timer_ctl)(void *private, bool add, int(*cb)(struct cldc_session *, void *), void *cb_private, time_t secs)`
- `int(* pkt_send)(void *private, const void *addr, size_t addrlen, const void *buf, size_t buflen)`
- `void(* event)(void *private, struct cldc_session *, struct cldc_fh *, uint32_t)`

3.9.1 Detailed Description

application-supplied facilities

3.9.2 Field Documentation

3.9.2.1 `void(* cldc_ops::event)(void *private, struct cldc_session *, struct cldc_fh *, uint32_t)`

3.9.2.2 `int(* cldc_ops::pkt_send)(void *private, const void *addr, size_t addrlen, const void *buf, size_t buflen)`

3.9.2.3 `bool(* cldc_ops::timer_ctl)(void *private, bool add, int(*cb)(struct cldc_session *, void *), void *cb_private, time_t secs)`

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

- `include/cldc.h`

3.10 cldc_pkt_info Struct Reference

```
#include <cldc.h>
```

Data Fields

- int [pkt_len](#)
- int [hdr_len](#)
- int [retries](#)
- char [user](#) [CLD_MAX_USERNAME]
- char [data](#) [0]

3.10.1 Field Documentation

3.10.1.1 char `cldc_pkt_info::data[0]`

3.10.1.2 int `cldc_pkt_info::hdr_len`

3.10.1.3 int `cldc_pkt_info::pkt_len`

3.10.1.4 int `cldc_pkt_info::retries`

3.10.1.5 char `cldc_pkt_info::user[CLD_MAX_USERNAME]`

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

- `include/cldc.h`

3.11 cldc_session Struct Reference

a single CLD client session

```
#include <cldc.h>
```

Data Fields

- uint8_t [sid](#) [CLD_SID_SZ]
- struct [cldc_ops](#) * [ops](#)
- struct [hail_log](#) [log](#)
- void * [private](#)
- uint8_t [addr](#) [64]
- size_t [addr_len](#)
- GArray * [fh](#)
- GList * [out_msg](#)
- time_t [msg_scan_time](#)
- time_t [expire_time](#)
- bool [expired](#)
- uint64_t [next_seqid_in](#)
- uint64_t [next_seqid_in_tr](#)
- uint64_t [next_seqid_out](#)
- char [user](#) [CLD_MAX_USERNAME]
- char [secret_key](#) [CLD_MAX_SECRET_KEY]
- bool [confirmed](#)
- enum [cld_msg_op](#) [msg_buf_op](#)
- unsigned int [msg_buf_len](#)
- char [msg_buf](#) [CLD_MAX_MSG_SZ]
- char [payload](#) [CLD_MAX_PAYLOAD_SZ]
- char [inode_name_temp](#) [CLD_INODE_NAME_MAX]

3.11.1 Detailed Description

a single CLD client session

3.11.2 Field Documentation

- 3.11.2.1 `uint8_t cldc_session::addr[64]`
- 3.11.2.2 `size_t cldc_session::addr_len`
- 3.11.2.3 `bool cldc_session::confirmed`
- 3.11.2.4 `time_t cldc_session::expire_time`
- 3.11.2.5 `bool cldc_session::expired`
- 3.11.2.6 `GArray* cldc_session::fh`
- 3.11.2.7 `char cldc_session::inode_name_temp[CLD_INODE_NAME_MAX]`
- 3.11.2.8 `struct hail_log cldc_session::log`
- 3.11.2.9 `char cldc_session::msg_buf[CLD_MAX_MSG_SZ]`
- 3.11.2.10 `unsigned int cldc_session::msg_buf_len`
- 3.11.2.11 `enum cld_msg_op cldc_session::msg_buf_op`
- 3.11.2.12 `time_t cldc_session::msg_scan_time`
- 3.11.2.13 `uint64_t cldc_session::next_seqid_in`
- 3.11.2.14 `uint64_t cldc_session::next_seqid_in_tr`
- 3.11.2.15 `uint64_t cldc_session::next_seqid_out`
- 3.11.2.16 `struct cldc_ops* cldc_session::ops`
- 3.11.2.17 `GList* cldc_session::out_msg`
- 3.11.2.18 `char cldc_session::payload[CLD_MAX_PAYLOAD_SZ]`
- 3.11.2.19 `void* cldc_session::private`
- 3.11.2.20 `char cldc_session::secret_key[CLD_MAX_SECRET_KEY]`
- 3.11.2.21 `uint8_t cldc_session::sid[CLD_SID_SZ]`
- 3.11.2.22 `char cldc_session::user[CLD_MAX_USERNAME]`

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

- `include/cldc.h`

3.12 cldc_udp Struct Reference

A UDP implementation of the CLD client protocol.

```
#include <cldc.h>
```

Data Fields

- uint8_t [addr](#) [64]
- size_t [addr_len](#)
- int [fd](#)
- struct [cldc_session](#) * [sess](#)
- int(* [cb](#))(struct [cldc_session](#) *, void *)
- void * [cb_private](#)

3.12.1 Detailed Description

A UDP implementation of the CLD client protocol.

3.12.2 Field Documentation

3.12.2.1 uint8_t [cldc_udp::addr](#)[64]

3.12.2.2 size_t [cldc_udp::addr_len](#)

3.12.2.3 int(* [cldc_udp::cb](#))(struct [cldc_session](#) *, void *)

3.12.2.4 void* [cldc_udp::cb_private](#)

3.12.2.5 int [cldc_udp::fd](#)

3.12.2.6 struct [cldc_session](#)* [cldc_udp::sess](#)

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

- [include/cldc.h](#)

3.13 hail_log Struct Reference

```
#include <hail_log.h>
```

Data Fields

- void(* [func](#))(int prio, const char *fmt,...) ATTR_PRINTF(2
- void(*) boo [debug](#))
- bool [verbose](#)

3.13.1 Field Documentation

3.13.1.1 void(*) boo hail_log::debug)

3.13.1.2 void(* hail_log::func)(int prio, const char *fmt,...) ATTR_PRINTF(2

3.13.1.3 bool hail_log::verbose

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

- include/[hail_log.h](#)

3.14 ncld_fh Struct Reference

```
#include <ncld.h>
```

Data Fields

- struct [ncld_sess](#) * [sess](#)
- struct [cldc_fh](#) * [fh](#)
- bool [is_open](#)
- int [errc](#)
- int [nios](#)
- unsigned int [event_mask](#)
- void(* [event_func](#))(void *, unsigned int)
- void * [event_arg](#)

3.14.1 Field Documentation

3.14.1.1 int ncld_fh::errc

3.14.1.2 void* ncld_fh::event_arg

3.14.1.3 void(* ncld_fh::event_func)(void *, unsigned int)

3.14.1.4 unsigned int ncld_fh::event_mask

3.14.1.5 struct cldc_fh* ncld_fh::fh

3.14.1.6 bool ncld_fh::is_open

3.14.1.7 int ncld_fh::nios

3.14.1.8 struct ncld_sess* ncld_fh::sess

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

- include/[ncld.h](#)

3.15 nclد_read Struct Reference

```
#include <nclد.h>
```

Data Fields

- const void * [ptr](#)
- long [length](#)
- struct [cldc_node_metadata](#) [meta](#)
- struct [nclد_fh](#) * [fh](#)
- bool [is_done](#)
- int [errc](#)

3.15.1 Field Documentation

3.15.1.1 int [nclد_read::errc](#)

3.15.1.2 struct [nclد_fh](#)* [nclد_read::fh](#)

3.15.1.3 bool [nclد_read::is_done](#)

3.15.1.4 long [nclد_read::length](#)

3.15.1.5 struct [cldc_node_metadata](#) [nclد_read::meta](#)

3.15.1.6 const void* [nclد_read::ptr](#)

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

- [include/nclد.h](#)

3.16 ncld_sess Struct Reference

```
#include <ncld.h>
```

Data Fields

- char * [host](#)
- unsigned short [port](#)
- GMutex * [mutex](#)
- GCond * [cond](#)
- GThread * [thread](#)
- bool [is_up](#)
- bool [open_done](#)
- int [errc](#)
- GList * [handles](#)
- int [to_thread](#) [2]
- struct [cldc_udp](#) * [udp](#)
- struct [cld_timer_udp_timer](#)
- struct [cld_timer_list](#) [tlist](#)
- void(* [event](#))(void *, unsigned int)
- void * [event_arg](#)

3.16.1 Field Documentation

- 3.16.1.1 `GCond* ncld_sess::cond`
- 3.16.1.2 `int ncld_sess::errc`
- 3.16.1.3 `void(* ncld_sess::event)(void *, unsigned int)`
- 3.16.1.4 `void* ncld_sess::event_arg`
- 3.16.1.5 `GList* ncld_sess::handles`
- 3.16.1.6 `char* ncld_sess::host`
- 3.16.1.7 `bool ncld_sess::is_up`
- 3.16.1.8 `GMutex* ncld_sess::mutex`
- 3.16.1.9 `bool ncld_sess::open_done`
- 3.16.1.10 `unsigned short ncld_sess::port`
- 3.16.1.11 `GThread* ncld_sess::thread`
- 3.16.1.12 `struct cld_timer_list ncld_sess::tlist`
- 3.16.1.13 `int ncld_sess::to_thread[2]`
- 3.16.1.14 `struct cldc_udp* ncld_sess::udp`
- 3.16.1.15 `struct cld_timer ncld_sess::udp_timer`

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

- [include/ncld.h](#)

Chapter 4

File Documentation

4.1 include/cld-private.h File Reference

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

```
#include <glib.h>
```

4.2 include/cld_common.h File Reference

```
#include <stdint.h>
#include <stdbool.h>
#include <string.h>
#include <time.h>
#include <openssl/sha.h>
#include <cld_msg_rpc.h>
```

Data Structures

- struct [cld_timer_list](#)
- struct [cld_timer](#)

Defines

- #define [CLD_ALIGN8](#)(n) ((8 - ((n) & 7)) & 7)
- #define [SIDFMT](#) "%016llx"
- #define [SIDARG](#)(sid) cld_sid2llu(sid)
- #define [CLD_PKT_FTR_LEN](#) sizeof(struct cld_pkt_ftr)
Length of the packet footer.
- #define [PKT_HDR_TO_STR_SCRATCH_LEN](#) 128

Functions

- void [cld_timer_add](#) (struct [cld_timer_list](#) *tlist, struct [cld_timer](#) *timer, time_t expires)
- void [cld_timer_del](#) (struct [cld_timer_list](#) *tlist, struct [cld_timer](#) *timer)
- time_t [cld_timers_run](#) (struct [cld_timer_list](#) *tlist)
- unsigned long long [cld_sid2llu](#) (const uint8_t *sid)
- void [__cld_rand64](#) (void *p)
- const char * [cld_errstr](#) (enum cle_err_codes ecode)
- int [cld_readport](#) (const char *fname)
- int [__cld_authcheck](#) (struct [hail_log](#) *log, const char *key, const void *buf, size_t buf_len, const void *sha)
- int [__cld_authsign](#) (struct [hail_log](#) *log, const char *key, const void *buf, size_t buf_len, void *sha)
- const char * [__cld_opstr](#) (enum cld_msg_op)
- const char * [__cld_pkt_hdr_to_str](#) (char *scratch, const char *pkt_hdr, size_t pkt_len)
- void [__cld_dump_buf](#) (const void *buf, size_t len)
- struct [__attribute__](#) ((packed)) cld_pkt_ftr
Footer that appears at the end of each packet.

4.2.1 Define Documentation

4.2.1.1 `#define CLD_ALIGN8(n) ((8 - ((n) & 7)) & 7)`

4.2.1.2 `#define CLD_PKT_FTR_LEN sizeof(struct cld_pkt_ftr)`

Length of the packet footer. This size is fixed

4.2.1.3 `#define PKT_HDR_TO_STR_SCRATCH_LEN 128`

4.2.1.4 `#define SIDARG(sid) cld_sid2llu(sid)`

4.2.1.5 `#define SIDFMT "%016llx"`

4.2.2 Function Documentation

4.2.2.1 `struct __attribute__((packed)) [read]`

Footer that appears at the end of each packet.

< packet sequence ID

< packet signature

4.2.2.2 `int __cld_authcheck (struct hail_log * log, const char * key, const void * buf, size_t buf_len, const void * sha)`

4.2.2.3 `int __cld_authsign (struct hail_log * log, const char * key, const void * buf, size_t buf_len, void * sha)`

4.2.2.4 `void __cld_dump_buf (const void * buf, size_t len)`

4.2.2.5 `const char* __cld_opstr (enum cld_msg_op)`

4.2.2.6 `const char* __cld_pkt_hdr_to_str (char * scratch, const char * pkt_hdr, size_t pkt_len)`

4.2.2.7 `void __cld_rand64 (void * p)`

4.2.2.8 `const char* cld_errstr (enum cle_err_codes ecode)`

4.2.2.9 `int cld_readport (const char * fname)`

4.2.2.10 `unsigned long long cld_sid2llu (const uint8_t * sid)`

4.2.2.11 `void cld_timer_add (struct cld_timer_list * tlist, struct cld_timer * timer, time_t expires)`

4.2.2.12 `void cld_timer_del (struct cld_timer_list * tlist, struct cld_timer * timer)`

4.2.2.13 `time_t cld_timers_run (struct cld_timer_list * tlist)`

4.3 include/cldc.h File Reference

```
#include <sys/types.h>
#include <stdbool.h>
#include <glib.h>
#include <cld_msg_rpc.h>
#include <cld_common.h>
#include <hail_log.h>
```

Data Structures

- struct [cldc_call_opts](#)
per-operation application options
- struct [cldc_node_metadata](#)
- struct [cldc_pkt_info](#)
- struct [cldc_msg](#)
an outgoing message, from client to server
- struct [cldc_fh](#)
an open file handle associated with a session
- struct [cldc_ops](#)
application-supplied facilities
- struct [cldc_session](#)
a single CLD client session
- struct [cldc_host](#)
Information for a single CLD server host.
- struct [cldc_udp](#)
A UDP implementation of the CLD client protocol.
- struct [cld_dirent_cur](#)

Functions

- int [cldc_receive_pkt](#) (struct [cldc_session](#) *sess, const void *net_addr, size_t net_addrlen, const void *buf, size_t buflen)
Packet received from remote host.
- void [cldc_init](#) (void)
- int [cldc_new_sess](#) (const struct [cldc_ops](#) *ops, const struct [cldc_call_opts](#) *copts, const void *addr, size_t addr_len, const char *user, const char *secret_key, void *private, struct [cldc_session](#) **sess_out)
- void [cldc_kill_sess](#) (struct [cldc_session](#) *sess)

- `int cldc_end_sess` (struct `cldc_session` *sess, const struct `cldc_call_opts` *copts)
- `int cldc_nop` (struct `cldc_session` *sess, const struct `cldc_call_opts` *copts)
- `int cldc_del` (struct `cldc_session` *sess, const struct `cldc_call_opts` *copts, const char *pathname)
- `int cldc_open` (struct `cldc_session` *sess, const struct `cldc_call_opts` *copts, const char *pathname, uint32_t open_mode, uint32_t events, struct `cldc_fh` **fh_out)
- `int cldc_close` (struct `cldc_fh` *fh, const struct `cldc_call_opts` *copts)
- `int cldc_unlock` (struct `cldc_fh` *fh, const struct `cldc_call_opts` *copts)
- `int cldc_lock` (struct `cldc_fh` *fh, const struct `cldc_call_opts` *copts, uint32_t lock_flags, bool wait_for_lock)
- `int cldc_put` (struct `cldc_fh` *fh, const struct `cldc_call_opts` *copts, const void *data, size_t data_len)
- `int cldc_get` (struct `cldc_fh` *fh, const struct `cldc_call_opts` *copts, bool metadata_only)
- `int cldc_dirent_count` (const void *data, size_t data_len)
- `int cldc_dirent_first` (struct `cld_dirent_cur` *dc)
- `int cldc_dirent_next` (struct `cld_dirent_cur` *dc)
- `void cldc_dirent_cur_init` (struct `cld_dirent_cur` *dc, const void *buf, size_t buflen)
- `void cldc_dirent_cur_fini` (struct `cld_dirent_cur` *dc)
- `char * cldc_dirent_name` (struct `cld_dirent_cur` *dc)
- `void cldc_copts_get_data` (const struct `cldc_call_opts` *copts, char **data, size_t *data_len)
- `void cldc_copts_get_metadata` (const struct `cldc_call_opts` *copts, struct `cldc_node_metadata` *md)
- `void cldc_udp_free` (struct `cldc_udp` *udp)
- `int cldc_udp_new` (const char *hostname, int port, struct `cldc_udp` **udp_out)
- `int cldc_udp_receive_pkt` (struct `cldc_udp` *udp)
- `int cldc_udp_pkt_send` (void *private, const void *addr, size_t addrlen, const void *buf, size_t buflen)
- `int cldc_getaddr` (GList **host_list, const char *thishost, struct `hail_log` *log)
- `int cldc_saveaddr` (struct `cldc_host` *hp, unsigned int priority, unsigned int weight, unsigned int port, unsigned int nlen, const char *name, struct `hail_log` *log)

4.3.1 Function Documentation

- 4.3.1.1 `int cldc_close (struct cldc_fh *fh, const struct cldc_call_opts *copts)`
- 4.3.1.2 `void cldc_copts_get_data (const struct cldc_call_opts *copts, char **data, size_t *data_len)`
- 4.3.1.3 `void cldc_copts_get_metadata (const struct cldc_call_opts *copts, struct cldc_node_metadata *md)`
- 4.3.1.4 `int cldc_del (struct cldc_session *sess, const struct cldc_call_opts *copts, const char *pathname)`
- 4.3.1.5 `int cldc_dirent_count (const void *data, size_t data_len)`
- 4.3.1.6 `void cldc_dirent_cur_fini (struct cld_dirent_cur *dc)`
- 4.3.1.7 `void cldc_dirent_cur_init (struct cld_dirent_cur *dc, const void *buf, size_t buflen)`
- 4.3.1.8 `int cldc_dirent_first (struct cld_dirent_cur *dc)`
- 4.3.1.9 `char* cldc_dirent_name (struct cld_dirent_cur *dc)`
- 4.3.1.10 `int cldc_dirent_next (struct cld_dirent_cur *dc)`
- 4.3.1.11 `int cldc_end_sess (struct cldc_session *sess, const struct cldc_call_opts *copts)`
- 4.3.1.12 `int cldc_get (struct cldc_fh *fh, const struct cldc_call_opts *copts, bool metadata_only)`
- 4.3.1.13 `int cldc_getaddr (GList **host_list, const char *thishost, struct hail_log *log)`
- 4.3.1.14 `void cldc_init (void)`
- 4.3.1.15 `void cldc_kill_sess (struct cldc_session *sess)`
- 4.3.1.16 `int cldc_lock (struct cldc_fh *fh, const struct cldc_call_opts *copts, uint32_t lock_flags, bool wait_for_lock)`
- 4.3.1.17 `int cldc_new_sess (const struct cldc_ops *ops, const struct cldc_call_opts *copts, const void *addr, size_t addr_len, const char *user, const char *secret_key, void *private, struct cldc_session **sess_out)`
- 4.3.1.18 `int cldc_nop (struct cldc_session *sess, const struct cldc_call_opts *copts)`
- 4.3.1.19 `int cldc_open (struct cldc_session *sess, const struct cldc_call_opts *copts, const char *pathname, uint32_t open_mode, uint32_t events, struct cldc_fh **fh_out)`
- 4.3.1.20 `int cldc_put (struct cldc_fh *fh, const struct cldc_call_opts *copts, const void *data, size_t data_len)`
- 4.3.1.21 `int cldc_receive_pkt (struct cldc_session *sess, const void *net_addr, size_t net_addrlen, const void *buf, size_t buflen)`

Packet received from remote host. Called by app when a packet is received from a remote host over the network

Parameters:

sess Session associated with received packet
net_addr Opaque network address
net_addrlen Size of opaque network address
buf Pointer to data buffer containing packet
buflen Length of received packet

Returns:

Zero for success, non-zero on error

4.3.1.22 `int cldc_saveaddr (struct cldc_host * hp, unsigned int priority, unsigned int weight, unsigned int port, unsigned int nlen, const char * name, struct hail_log * log)`

4.3.1.23 `void cldc_udp_free (struct cldc_udp * udp)`

4.3.1.24 `int cldc_udp_new (const char * hostname, int port, struct cldc_udp ** udp_out)`

4.3.1.25 `int cldc_udp_pkt_send (void * private, const void * addr, size_t addrlen, const void * buf, size_t buflen)`

4.3.1.26 `int cldc_udp_receive_pkt (struct cldc_udp * udp)`

4.3.1.27 `int cldc_unlock (struct cldc_fh * fh, const struct cldc_call_opts * copts)`

4.4 include/hail_log.h File Reference

```
#include <stdbool.h>
```

Data Structures

- struct [hail_log](#)

Defines

- #define [ATTR_PRINTF](#)(x, y)
- #define [HAIL_VERBOSE](#)(log,...)
Print out a CLD session debug message if enabled.
- #define [HAIL_DEBUG](#)(log,...)
Print out an application debug message if enabled.
- #define [HAIL_INFO](#)(log,...) (log)->func(LOG_INFO, __VA_ARGS__)
Print out an informational log message.
- #define [HAIL_WARN](#)(log,...) (log)->func(LOG_WARNING, __VA_ARGS__)
Print out a warning message.
- #define [HAIL_ERR](#)(log,...) (log)->func(LOG_ERR, __VA_ARGS__)
Print out an error message.
- #define [HAIL_CRIT](#)(log,...) (log)->func(LOG_CRIT, __VA_ARGS__)
Print out a critical warning message.

4.4.1 Define Documentation

4.4.1.1 #define ATTR_PRINTF(x, y)

4.4.1.2 #define HAIL_CRIT(log, ...) (log)->func(LOG_CRIT, __VA_ARGS__)

Print out a critical warning message.

4.4.1.3 #define HAIL_DEBUG(log, ...)

Value:

```
if ((log)->debug) { \
    (log)->func(LOG_DEBUG, __VA_ARGS__); \
}
```

Print out an application debug message if enabled.

4.4.1.4 #define HAIL_ERR(log, ...) (log)->func(LOG_ERR, __VA_ARGS__)

Print out an error message.

4.4.1.5 #define HAIL_INFO(log, ...) (log)->func(LOG_INFO, __VA_ARGS__)

Print out an informational log message.

4.4.1.6 #define HAIL_VERBOSE(log, ...)

Value:

```
if ((log)->verbose) { \
    (log)->func(LOG_DEBUG, __VA_ARGS__); \
}
```

Print out a CLD session debug message if enabled.

4.4.1.7 #define HAIL_WARN(log, ...) (log)->func(LOG_WARNING, __VA_ARGS__)

Print out a warning message.

4.5 include/ncld.h File Reference

```
#include <stdbool.h>
#include <glib.h>
#include <cldc.h>
```

Data Structures

- struct [ncld_sess](#)
- struct [ncld_fh](#)
- struct [ncld_read](#)

Functions

- struct [ncld_sess](#) * [ncld_sess_open](#) (const char *host, int port, int *error, void(*event)(void *, unsigned int), void *ev_arg, const char *cld_user, const char *cld_key, struct [hail_log](#) *log)
- struct [ncld_fh](#) * [ncld_open](#) (struct [ncld_sess](#) *s, const char *fname, unsigned int mode, int *error, unsigned int events, void(*event)(void *, unsigned int), void *ev_arg)
- int [ncld_del](#) (struct [ncld_sess](#) *nsess, const char *fname)
- struct [ncld_read](#) * [ncld_get](#) (struct [ncld_fh](#) *fh, int *error)
- struct [ncld_read](#) * [ncld_get_meta](#) (struct [ncld_fh](#) *fh, int *error)
- void [ncld_read_free](#) (struct [ncld_read](#) *rp)
- int [ncld_write](#) (struct [ncld_fh](#) *, const void *data, long len)
- int [ncld_trylock](#) (struct [ncld_fh](#) *)
- int [ncld_qlock](#) (struct [ncld_fh](#) *)
- int [ncld_unlock](#) (struct [ncld_fh](#) *)
- void [ncld_close](#) (struct [ncld_fh](#) *)
- void [ncld_sess_close](#) (struct [ncld_sess](#) *s)
- void [ncld_init](#) (void)

4.5.1 Function Documentation

4.5.1.1 void `nclد_close` (struct `nclد_fh` *)

4.5.1.2 int `nclد_del` (struct `nclد_sess` * *nsess*, const char * *fname*)

4.5.1.3 struct `nclد_read`* `nclد_get` (struct `nclد_fh` * *fh*, int * *error*) [read]

4.5.1.4 struct `nclد_read`* `nclد_get_meta` (struct `nclد_fh` * *fh*, int * *error*) [read]

4.5.1.5 void `nclد_init` (void)

4.5.1.6 struct `nclد_fh`* `nclد_open` (struct `nclد_sess` * *s*, const char * *fname*, unsigned int *mode*, int * *error*, unsigned int *events*, void(*) (void *, unsigned int) *event*, void * *ev_arg*) [read]

4.5.1.7 int `nclد_qlock` (struct `nclد_fh` *)

4.5.1.8 void `nclد_read_free` (struct `nclد_read` * *rp*)

4.5.1.9 void `nclد_sess_close` (struct `nclد_sess` * *s*)

4.5.1.10 struct `nclد_sess`* `nclد_sess_open` (const char * *host*, int *port*, int * *error*, void(*) (void *, unsigned int) *event*, void * *ev_arg*, const char * *cld_user*, const char * *cld_key*, struct `hail_log` * *log*) [read]

4.5.1.11 int `nclد_trylock` (struct `nclد_fh` *)

4.5.1.12 int `nclد_unlock` (struct `nclد_fh` *)

4.5.1.13 int `nclد_write` (struct `nclد_fh` *, const void * *data*, long *len*)

Index

- `__attribute__`
 - `cld_common.h`, [25](#)
 - `__cld_authcheck`
 - `cld_common.h`, [25](#)
 - `__cld_authsign`
 - `cld_common.h`, [25](#)
 - `__cld_dump_buf`
 - `cld_common.h`, [25](#)
 - `__cld_opstr`
 - `cld_common.h`, [25](#)
 - `__cld_pkt_hdr_to_str`
 - `cld_common.h`, [25](#)
 - `__cld_rand64`
 - `cld_common.h`, [25](#)
- `addr`
 - `cldc_session`, [16](#)
 - `cldc_udp`, [17](#)
- `addr_len`
 - `cldc_session`, [16](#)
 - `cldc_udp`, [17](#)
- `ATTR_PRINTF`
 - `hail_log.h`, [31](#)
- `cb`
 - `cld_timer`, [6](#)
 - `cldc_call_opts`, [8](#)
 - `cldc_msg`, [11](#)
 - `cldc_udp`, [17](#)
- `cb_private`
 - `cldc_msg`, [11](#)
 - `cldc_udp`, [17](#)
- `CLD_ALIGN8`
 - `cld_common.h`, [25](#)
- `cld_common.h`
 - `__attribute__`, [25](#)
 - `__cld_authcheck`, [25](#)
 - `__cld_authsign`, [25](#)
 - `__cld_dump_buf`, [25](#)
 - `__cld_opstr`, [25](#)
 - `__cld_pkt_hdr_to_str`, [25](#)
 - `__cld_rand64`, [25](#)
 - `CLD_ALIGN8`, [25](#)
 - `cld_errstr`, [25](#)
 - `CLD_PKT_FTR_LEN`, [25](#)
 - `cld_readport`, [25](#)
 - `cld_sid2llu`, [25](#)
 - `cld_timer_add`, [25](#)
 - `cld_timer_del`, [25](#)
 - `cld_timers_run`, [25](#)
 - `PKT_HDR_TO_STR_SCRATCH_LEN`, [25](#)
 - `SIDARG`, [25](#)
 - `SIDFMT`, [25](#)
- `cld_dirent_cur`, [5](#)
 - `p`, [5](#)
 - `tmp_len`, [5](#)
- `cld_errstr`
 - `cld_common.h`, [25](#)
- `CLD_PKT_FTR_LEN`
 - `cld_common.h`, [25](#)
- `cld_readport`
 - `cld_common.h`, [25](#)
- `cld_sid2llu`
 - `cld_common.h`, [25](#)
- `cld_timer`, [6](#)
 - `cb`, [6](#)
 - `expires`, [6](#)
 - `fired`, [6](#)
 - `name`, [6](#)
 - `on_list`, [6](#)
 - `userdata`, [6](#)
- `cld_timer_add`
 - `cld_common.h`, [25](#)
- `cld_timer_del`
 - `cld_common.h`, [25](#)
- `cld_timer_list`, [7](#)
 - `list`, [7](#)
- `cld_timers_run`
 - `cld_common.h`, [25](#)
- `cldc.h`
 - `cldc_close`, [29](#)
 - `cldc_copts_get_data`, [29](#)
 - `cldc_copts_get_metadata`, [29](#)
 - `cldc_del`, [29](#)
 - `cldc_dirent_count`, [29](#)
 - `cldc_dirent_cur_fini`, [29](#)
 - `cldc_dirent_cur_init`, [29](#)
 - `cldc_dirent_first`, [29](#)
 - `cldc_dirent_name`, [29](#)
 - `cldc_dirent_next`, [29](#)

- cldc_end_sess, 29
- cldc_get, 29
- cldc_getaddr, 29
- cldc_init, 29
- cldc_kill_sess, 29
- cldc_lock, 29
- cldc_new_sess, 29
- cldc_nop, 29
- cldc_open, 29
- cldc_put, 29
- cldc_receive_pkt, 29
- cldc_saveaddr, 30
- cldc_udp_free, 30
- cldc_udp_new, 30
- cldc_udp_pkt_send, 30
- cldc_udp_receive_pkt, 30
- cldc_unlock, 30
- cldc_call_opts, 8
 - cb, 8
 - private, 8
 - resp, 8
- cldc_close
 - cldc.h, 29
- cldc_copts_get_data
 - cldc.h, 29
- cldc_copts_get_metadata
 - cldc.h, 29
- cldc_del
 - cldc.h, 29
- cldc_dirent_count
 - cldc.h, 29
- cldc_dirent_cur_fini
 - cldc.h, 29
- cldc_dirent_cur_init
 - cldc.h, 29
- cldc_dirent_first
 - cldc.h, 29
- cldc_dirent_name
 - cldc.h, 29
- cldc_dirent_next
 - cldc.h, 29
- cldc_end_sess
 - cldc.h, 29
- cldc_fh, 9
 - fh, 9
 - sess, 9
 - valid, 9
- cldc_get
 - cldc.h, 29
- cldc_getaddr
 - cldc.h, 29
- cldc_host, 10
 - host, 10
 - port, 10
- prio, 10
- weight, 10
- cldc_init
 - cldc.h, 29
- cldc_kill_sess
 - cldc.h, 29
- cldc_lock
 - cldc.h, 29
- cldc_msg, 11
 - cb, 11
 - cb_private, 11
 - copts, 11
 - done, 11
 - expire_time, 11
 - n_pkts, 11
 - op, 11
 - pkt_info, 11
 - sess, 11
 - xid, 11
- cldc_new_sess
 - cldc.h, 29
- cldc_node_metadata, 12
 - flags, 12
 - inode_name, 12
 - inum, 12
 - time_create, 12
 - time_modify, 12
 - vers, 12
- cldc_nop
 - cldc.h, 29
- cldc_open
 - cldc.h, 29
- cldc_ops, 13
 - event, 13
 - pkt_send, 13
 - timer_ctl, 13
- cldc_pkt_info, 14
 - data, 14
 - hdr_len, 14
 - pkt_len, 14
 - retries, 14
 - user, 14
- cldc_put
 - cldc.h, 29
- cldc_receive_pkt
 - cldc.h, 29
- cldc_saveaddr
 - cldc.h, 30
- cldc_session, 15
 - addr, 16
 - addr_len, 16
 - confirmed, 16
 - expire_time, 16
 - expired, 16

- fh, 16
- inode_name_temp, 16
- log, 16
- msg_buf, 16
- msg_buf_len, 16
- msg_buf_op, 16
- msg_scan_time, 16
- next_seqid_in, 16
- next_seqid_in_tr, 16
- next_seqid_out, 16
- ops, 16
- out_msg, 16
- payload, 16
- private, 16
- secret_key, 16
- sid, 16
- user, 16
- cldc_udp, 17
 - addr, 17
 - addr_len, 17
 - cb, 17
 - cb_private, 17
 - fd, 17
 - sess, 17
- cldc_udp_free
 - cldc.h, 30
- cldc_udp_new
 - cldc.h, 30
- cldc_udp_pkt_send
 - cldc.h, 30
- cldc_udp_receive_pkt
 - cldc.h, 30
- cldc_unlock
 - cldc.h, 30
- cond
 - ncld_sess, 22
- confirmed
 - cldc_session, 16
- copts
 - cldc_msg, 11
- data
 - cldc_pkt_info, 14
- debug
 - hail_log, 18
- done
 - cldc_msg, 11
- errc
 - ncld_fh, 19
 - ncld_read, 20
 - ncld_sess, 22
- event
 - cldc_ops, 13
 - ncld_sess, 22
- event_arg
 - ncld_fh, 19
 - ncld_sess, 22
- event_func
 - ncld_fh, 19
- event_mask
 - ncld_fh, 19
- expire_time
 - cldc_msg, 11
 - cldc_session, 16
- expired
 - cldc_session, 16
- expires
 - cld_timer, 6
- fd
 - cldc_udp, 17
- fh
 - cldc_fh, 9
 - cldc_session, 16
 - ncld_fh, 19
 - ncld_read, 20
- fired
 - cld_timer, 6
- flags
 - cldc_node_metadata, 12
- func
 - hail_log, 18
- HAIL_CRIT
 - hail_log.h, 31
- HAIL_DEBUG
 - hail_log.h, 31
- HAIL_ERR
 - hail_log.h, 31
- HAIL_INFO
 - hail_log.h, 32
- hail_log, 18
 - debug, 18
 - func, 18
 - verbose, 18
- hail_log.h
 - ATTR_PRINTF, 31
 - HAIL_CRIT, 31
 - HAIL_DEBUG, 31
 - HAIL_ERR, 31
 - HAIL_INFO, 32
 - HAIL_VERBOSE, 32
 - HAIL_WARN, 32
- HAIL_VERBOSE
 - hail_log.h, 32
- HAIL_WARN
 - hail_log.h, 32

- handles
 - ncld_sess, 22
- hdr_len
 - cldc_pkt_info, 14
- host
 - cldc_host, 10
 - ncld_sess, 22
- include/cld-private.h, 23
- include/cld_common.h, 24
- include/cldc.h, 26
- include/hail_log.h, 31
- include/ncld.h, 33
- inode_name
 - cldc_node_metadata, 12
- inode_name_temp
 - cldc_session, 16
- inum
 - cldc_node_metadata, 12
- is_done
 - ncld_read, 20
- is_open
 - ncld_fh, 19
- is_up
 - ncld_sess, 22
- length
 - ncld_read, 20
- list
 - cld_timer_list, 7
- log
 - cldc_session, 16
- meta
 - ncld_read, 20
- msg_buf
 - cldc_session, 16
- msg_buf_len
 - cldc_session, 16
- msg_buf_op
 - cldc_session, 16
- msg_scan_time
 - cldc_session, 16
- mutex
 - ncld_sess, 22
- n_pkts
 - cldc_msg, 11
- name
 - cld_timer, 6
- ncld.h
 - ncld_close, 34
 - ncld_del, 34
 - ncld_get, 34
 - ncld_get_meta, 34
 - ncld_init, 34
 - ncld_open, 34
 - ncld_qlock, 34
 - ncld_read_free, 34
 - ncld_sess_close, 34
 - ncld_sess_open, 34
 - ncld_trylock, 34
 - ncld_unlock, 34
 - ncld_write, 34
- ncld_close
 - ncld.h, 34
- ncld_del
 - ncld.h, 34
- ncld_fh, 19
 - errc, 19
 - event_arg, 19
 - event_func, 19
 - event_mask, 19
 - fh, 19
 - is_open, 19
 - nios, 19
 - sess, 19
- ncld_get
 - ncld.h, 34
- ncld_get_meta
 - ncld.h, 34
- ncld_init
 - ncld.h, 34
- ncld_open
 - ncld.h, 34
- ncld_qlock
 - ncld.h, 34
- ncld_read, 20
 - errc, 20
 - fh, 20
 - is_done, 20
 - length, 20
 - meta, 20
 - ptr, 20
- ncld_read_free
 - ncld.h, 34
- ncld_sess, 21
 - cond, 22
 - errc, 22
 - event, 22
 - event_arg, 22
 - handles, 22
 - host, 22
 - is_up, 22
 - mutex, 22
 - open_done, 22
 - port, 22
 - thread, 22

- tlist, 22
- to_thread, 22
- udp, 22
- udp_timer, 22
- nclد_sess_close
 - nclد.h, 34
- nclد_sess_open
 - nclد.h, 34
- nclد_trylock
 - nclد.h, 34
- nclد_unlock
 - nclد.h, 34
- nclد_write
 - nclد.h, 34
- next_seqid_in
 - cldc_session, 16
- next_seqid_in_tr
 - cldc_session, 16
- next_seqid_out
 - cldc_session, 16
- nios
 - nclد_fh, 19
- on_list
 - cld_timer, 6
- op
 - cldc_msg, 11
- open_done
 - nclد_sess, 22
- ops
 - cldc_session, 16
- out_msg
 - cldc_session, 16
- p
 - cld_dirent_cur, 5
- payload
 - cldc_session, 16
- PKT_HDR_TO_STR_SCRATCH_LEN
 - cld_common.h, 25
- pkt_info
 - cldc_msg, 11
- pkt_len
 - cldc_pkt_info, 14
- pkt_send
 - cldc_ops, 13
- port
 - cldc_host, 10
 - nclد_sess, 22
- prio
 - cldc_host, 10
- private
 - cldc_call_opts, 8
 - cldc_session, 16
- ptr
 - nclد_read, 20
- resp
 - cldc_call_opts, 8
- retries
 - cldc_pkt_info, 14
- secret_key
 - cldc_session, 16
- sess
 - cldc_fh, 9
 - cldc_msg, 11
 - cldc_udp, 17
 - nclد_fh, 19
- sid
 - cldc_session, 16
- SIDARG
 - cld_common.h, 25
- SIDFMT
 - cld_common.h, 25
- thread
 - nclد_sess, 22
- time_create
 - cldc_node_metadata, 12
- time_modify
 - cldc_node_metadata, 12
- timer_ctl
 - cldc_ops, 13
- tlist
 - nclد_sess, 22
- tmp_len
 - cld_dirent_cur, 5
- to_thread
 - nclد_sess, 22
- udp
 - nclد_sess, 22
- udp_timer
 - nclد_sess, 22
- user
 - cldc_pkt_info, 14
 - cldc_session, 16
- userdata
 - cld_timer, 6
- valid
 - cldc_fh, 9
- verbose
 - hail_log, 18
- vers
 - cldc_node_metadata, 12
- weight

cldc_host, [10](#)

xid

cldc_msg, [11](#)