CLD

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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 ncld_read Struct Reference

`#include <ncld.h>`

Data Fields

- const void * ptr
- long length
- struct cldc_node_metadata meta
- struct ncld_fh * fh
- bool is_done
- int errc

3.15.1 Field Documentation

3.15.1.1 int ncld_read::errc

3.15.1.2 struct ncld_fh* ncld_read::fh

3.15.1.3 bool ncld_read::is_done

3.15.1.4 long ncld_read::length

3.15.1.5 struct cldc_node_metadata ncld_read::meta

3.15.1.6 const void* ncld_read::ptr

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

- include/ncld.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*)**

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 ncld_close (struct ncld_fh *)

4.5.1.2 int ncld_del (struct ncld_sess * *nsess,* const char * *fname*)

4.5.1.3 struct ncld_read* ncld_get (struct ncld_fh * *fh,* int * *error*) `[read]`

4.5.1.4 struct ncld_read* ncld_get_meta (struct ncld_fh * *fh,* int * *error*) `[read]`

4.5.1.5 void ncld_init (void)

4.5.1.6 struct ncld_fh* ncld_open (struct ncld_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 ncld_qlock (struct ncld_fh *)

4.5.1.8 void ncld_read_free (struct ncld_read * *rp*)

4.5.1.9 void ncld_sess_close (struct ncld_sess * *s*)

4.5.1.10 struct ncld_sess* ncld_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 ncld_trylock (struct ncld_fh *)

4.5.1.12 int ncld_unlock (struct ncld_fh *)

4.5.1.13 int ncld_write (struct ncld_fh *, const void * *data,* long *len*)

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