

CLD

0.1git

Generated by Doxygen 1.7.6.1

Tue Mar 13 2012 00:13:15

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	chunk_check_status Struct Reference	5
3.1.1	Field Documentation	5
3.1.1.1	count	5
3.1.1.2	lastdone	5
3.1.1.3	pad	5
3.1.1.4	state	5
3.2	chunksrv_req Struct Reference	5
3.2.1	Field Documentation	6
3.2.1.1	data_len	6
3.2.1.2	flags	6
3.2.1.3	key_len	6
3.2.1.4	magic	6
3.2.1.5	nonce	6
3.2.1.6	op	6
3.2.1.7	sig	6
3.3	chunksrv_resp Struct Reference	6
3.3.1	Field Documentation	7
3.3.1.1	data_len	7
3.3.1.2	hash	7

3.3.1.3	magic	7
3.3.1.4	nonce	7
3.3.1.5	resp_code	7
3.3.1.6	rsv1	7
3.4	chunksrv_resp_chkstat Struct Reference	7
3.4.1	Field Documentation	7
3.4.1.1	chkstat	7
3.4.1.2	resp	7
3.5	chunksrv_resp_get Struct Reference	7
3.5.1	Field Documentation	8
3.5.1.1	mtime	8
3.5.1.2	resp	8
3.6	cld_dirent_cur Struct Reference	8
3.6.1	Field Documentation	8
3.6.1.1	p	8
3.6.1.2	tmp_len	8
3.7	cld_timer Struct Reference	8
3.7.1	Field Documentation	9
3.7.1.1	cb	9
3.7.1.2	expires	9
3.7.1.3	fired	9
3.7.1.4	name	9
3.7.1.5	on_list	9
3.7.1.6	userdata	9
3.8	cld_timer_list Struct Reference	9
3.8.1	Field Documentation	9
3.8.1.1	list	9
3.8.1.2	runmark	9
3.9	cldc_call_opts Struct Reference	10
3.9.1	Detailed Description	10
3.9.2	Field Documentation	10
3.9.2.1	cb	10
3.9.2.2	private	10
3.9.2.3	resp	10

3.10 cldc_fh Struct Reference	10
3.10.1 Detailed Description	10
3.10.2 Field Documentation	11
3.10.2.1 fh	11
3.10.2.2 sess	11
3.10.2.3 valid	11
3.11 cldc_host Struct Reference	11
3.11.1 Detailed Description	11
3.11.2 Field Documentation	11
3.11.2.1 host	11
3.11.2.2 port	11
3.11.2.3 prio	11
3.11.2.4 weight	11
3.12 cldc_msg Struct Reference	12
3.12.1 Detailed Description	12
3.12.2 Field Documentation	12
3.12.2.1 cb	12
3.12.2.2 cb_private	12
3.12.2.3 copts	12
3.12.2.4 done	12
3.12.2.5 expire_time	12
3.12.2.6 n_pkts	12
3.12.2.7 op	12
3.12.2.8 pkt_info	12
3.12.2.9 sess	12
3.12.2.10 xid	13
3.13 cldc_node_metadata Struct Reference	13
3.13.1 Field Documentation	13
3.13.1.1 flags	13
3.13.1.2 inode_name	13
3.13.1.3 inum	13
3.13.1.4 time_create	13
3.13.1.5 time_modify	13
3.13.1.6 vers	13

3.14 cldc_ops Struct Reference	13
3.14.1 Detailed Description	14
3.14.2 Field Documentation	14
3.14.2.1 event	14
3.14.2.2 pkt_send	14
3.14.2.3 timer_ctl	14
3.15 cldc_pkt_info Struct Reference	14
3.15.1 Field Documentation	14
3.15.1.1 data	14
3.15.1.2 hdr_len	15
3.15.1.3 pkt_len	15
3.15.1.4 retries	15
3.15.1.5 user	15
3.16 cldc_session Struct Reference	15
3.16.1 Detailed Description	15
3.16.2 Field Documentation	16
3.16.2.1 addr	16
3.16.2.2 addr_len	16
3.16.2.3 cfh	16
3.16.2.4 confirmed	16
3.16.2.5 expire_time	16
3.16.2.6 expired	16
3.16.2.7 inode_name_temp	16
3.16.2.8 log	16
3.16.2.9 msg_buf	16
3.16.2.10 msg_buf_len	16
3.16.2.11 msg_buf_op	16
3.16.2.12 msg_scan_time	16
3.16.2.13 next_seqid_in	16
3.16.2.14 next_seqid_in_tr	16
3.16.2.15 next_seqid_out	16
3.16.2.16 ops	16
3.16.2.17 out_msg	16
3.16.2.18 payload	16

3.16.2.19 private	16
3.16.2.20 secret_key	16
3.16.2.21 sid	16
3.16.2.22 user	16
3.17 cldc_udp Struct Reference	17
3.17.1 Detailed Description	17
3.17.2 Field Documentation	17
3.17.2.1 addr	17
3.17.2.2 addr_len	17
3.17.2.3 cb	17
3.17.2.4 cb_private	17
3.17.2.5 fd	17
3.17.2.6 sess	17
3.18 hail_log Struct Reference	17
3.18.1 Field Documentation	18
3.18.1.1 debug	18
3.18.1.2 func	18
3.18.1.3 verbose	18
3.19 hstor_blist Struct Reference	18
3.19.1 Field Documentation	18
3.19.1.1 list	18
3.19.1.2 own_id	18
3.19.1.3 own_name	18
3.20 hstor_bucket Struct Reference	18
3.20.1 Field Documentation	19
3.20.1.1 name	19
3.20.1.2 time_create	19
3.21 hstor_client Struct Reference	19
3.21.1 Field Documentation	19
3.21.1.1 acc	19
3.21.1.2 curl	19
3.21.1.3 host	19
3.21.1.4 key	19
3.21.1.5 subdomain	19

3.21.1.6	user	19
3.21.1.7	verbose	20
3.22	hstor_keylist Struct Reference	20
3.22.1	Field Documentation	20
3.22.1.1	common_pfx	20
3.22.1.2	contents	20
3.22.1.3	delim	20
3.22.1.4	marker	20
3.22.1.5	max_keys	20
3.22.1.6	name	20
3.22.1.7	prefix	20
3.22.1.8	trunc	20
3.23	hstor_object Struct Reference	21
3.23.1	Field Documentation	21
3.23.1.1	etag	21
3.23.1.2	key	21
3.23.1.3	own_id	21
3.23.1.4	own_name	21
3.23.1.5	size	21
3.23.1.6	storage	21
3.23.1.7	time_mod	21
3.24	http_hdr Struct Reference	21
3.24.1	Field Documentation	22
3.24.1.1	key	22
3.24.1.2	val	22
3.25	http_req Struct Reference	22
3.25.1	Field Documentation	22
3.25.1.1	hdr	22
3.25.1.2	major	22
3.25.1.3	method	22
3.25.1.4	minor	22
3.25.1.5	n_hdr	22
3.25.1.6	orig_path	22
3.25.1.7	uri	22

3.26 http_uri Struct Reference	23
3.26.1 Field Documentation	23
3.26.1.1 fragment	23
3.26.1.2 fragment_len	23
3.26.1.3 hostname	23
3.26.1.4 hostname_len	23
3.26.1.5 path	23
3.26.1.6 path_len	23
3.26.1.7 port	23
3.26.1.8 query	23
3.26.1.9 query_len	23
3.26.1.10 scheme	23
3.26.1.11 scheme_len	23
3.26.1.12 userinfo	23
3.26.1.13 userinfo_len	24
3.27 list_head Struct Reference	24
3.27.1 Field Documentation	24
3.27.1.1 next	24
3.27.1.2 prev	24
3.28 nclد_fh Struct Reference	24
3.28.1 Field Documentation	25
3.28.1.1 errc	25
3.28.1.2 event_arg	25
3.28.1.3 event_func	25
3.28.1.4 event_mask	25
3.28.1.5 fh	25
3.28.1.6 is_open	25
3.28.1.7 nios	25
3.28.1.8 sess	25
3.29 nclد_read Struct Reference	25
3.29.1 Field Documentation	25
3.29.1.1 errc	25
3.29.1.2 fh	25
3.29.1.3 is_done	25

3.29.1.4	length	25
3.29.1.5	meta	26
3.29.1.6	ptr	26
3.30	ncld_sess Struct Reference	26
3.30.1	Field Documentation	26
3.30.1.1	cond	26
3.30.1.2	errc	26
3.30.1.3	event	26
3.30.1.4	event_arg	26
3.30.1.5	handles	26
3.30.1.6	host	26
3.30.1.7	is_up	27
3.30.1.8	mutex	27
3.30.1.9	open_done	27
3.30.1.10	port	27
3.30.1.11	thread	27
3.30.1.12	tlist	27
3.30.1.13	to_thread	27
3.30.1.14	udp	27
3.30.1.15	udp_timer	27
3.31	objcache Struct Reference	27
3.31.1	Field Documentation	27
3.31.1.1	lock	27
3.31.1.2	table	27
3.32	objcache_entry Struct Reference	27
3.32.1	Field Documentation	28
3.32.1.1	flags	28
3.32.1.2	hash	28
3.32.1.3	ref	28
3.33	st_client Struct Reference	28
3.33.1	Field Documentation	28
3.33.1.1	fd	28
3.33.1.2	host	28
3.33.1.3	key	28

3.33.1.4	req_buf	28
3.33.1.5	ssl	28
3.33.1.6	ssl_ctx	29
3.33.1.7	user	29
3.33.1.8	verbose	29
3.34	st_keylist Struct Reference	29
3.34.1	Field Documentation	29
3.34.1.1	contents	29
3.34.1.2	name	29
3.35	st_object Struct Reference	29
3.35.1	Field Documentation	30
3.35.1.1	etag	30
3.35.1.2	name	30
3.35.1.3	owner	30
3.35.1.4	size	30
3.35.1.5	time_mod	30
4	File Documentation	31
4.1	include/chunk-private.h File Reference	31
4.1.1	Define Documentation	31
4.1.1.1	BAD_TPATH_FMT	31
4.1.1.2	MDB_TPATH_FMT	31
4.1.1.3	PREFIX_LEN	31
4.2	include/chunk_msg.h File Reference	31
4.2.1	Define Documentation	32
4.2.1.1	CHUNKD_MAGIC	32
4.2.2	Enumeration Type Documentation	32
4.2.2.1	anonymous enum	32
4.2.2.2	chunk_check_state	32
4.2.2.3	chunk_errcode	33
4.2.2.4	chunk_flags	33
4.2.2.5	chunksrv_ops	33
4.3	include/chunkc.h File Reference	34
4.3.1	Function Documentation	35

4.3.1.1	stc_check_start	35
4.3.1.2	stc_check_status	35
4.3.1.3	stc_cp	35
4.3.1.4	stc_del	35
4.3.1.5	stc_free	35
4.3.1.6	stc_free_keylist	35
4.3.1.7	stc_free_object	35
4.3.1.8	stc_get	35
4.3.1.9	stc_get_inline	35
4.3.1.10	stc_get_recv	35
4.3.1.11	stc_get_start	35
4.3.1.12	stc_init	35
4.3.1.13	stc_keys	35
4.3.1.14	stc_new	35
4.3.1.15	stc_ping	35
4.3.1.16	stc_put	35
4.3.1.17	stc_put_inline	35
4.3.1.18	stc_put_send	35
4.3.1.19	stc_put_start	35
4.3.1.20	stc_put_sync	36
4.3.1.21	stc_readport	36
4.3.1.22	stc_table_open	36
4.4	include/chunksrv.h File Reference	36
4.4.1	Function Documentation	36
4.4.1.1	chreq_sign	36
4.4.1.2	req_len	36
4.5	include/cld-private.h File Reference	36
4.6	include/cld_common.h File Reference	36
4.6.1	Define Documentation	37
4.6.1.1	CLD_ALIGN8	37
4.6.1.2	CLD_PKT_FTR_LEN	37
4.6.1.3	PKT_HDR_TO_STR_SCRATCH_LEN	37
4.6.1.4	SIDARG	37
4.6.1.5	SIDFMT	37

4.6.2	Function Documentation	37
4.6.2.1	__attribute__	38
4.6.2.2	__cld_dump_buf	38
4.6.2.3	cld_authcheck	38
4.6.2.4	cld_authsign	38
4.6.2.5	cld_errstr	38
4.6.2.6	cld_opstr	38
4.6.2.7	cld_pkt_hdr_to_str	38
4.6.2.8	cld_rand64	38
4.6.2.9	cld_readport	38
4.6.2.10	cld_sid2llu	38
4.6.2.11	cld_timer_add	38
4.6.2.12	cld_timer_del	38
4.6.2.13	cld_timers_run	38
4.7	include/cldc.h File Reference	38
4.7.1	Function Documentation	40
4.7.1.1	cldc_close	40
4.7.1.2	cldc_copts_get_data	40
4.7.1.3	cldc_copts_get_metadata	40
4.7.1.4	cldc_del	40
4.7.1.5	cldc_dirent_count	40
4.7.1.6	cldc_dirent_cur_fini	40
4.7.1.7	cldc_dirent_cur_init	40
4.7.1.8	cldc_dirent_first	40
4.7.1.9	cldc_dirent_name	40
4.7.1.10	cldc_dirent_next	40
4.7.1.11	cldc_end_sess	40
4.7.1.12	cldc_get	40
4.7.1.13	cldc_getaddr	40
4.7.1.14	cldc_init	41
4.7.1.15	cldc_kill_sess	41
4.7.1.16	cldc_lock	41
4.7.1.17	cldc_new_sess	41
4.7.1.18	cldc_nop	41

4.7.1.19	cldc_open	41
4.7.1.20	cldc_put	41
4.7.1.21	cldc_receive_pkt	41
4.7.1.22	cldc_saveaddr	41
4.7.1.23	cldc_udp_free	41
4.7.1.24	cldc_udp_new	41
4.7.1.25	cldc_udp_pkt_send	42
4.7.1.26	cldc_udp_receive_pkt	42
4.7.1.27	cldc_unlock	42
4.8	include/elist.h File Reference	42
4.8.1	Define Documentation	42
4.8.1.1	INIT_LIST_HEAD	42
4.8.1.2	list_entry	43
4.8.1.3	list_for_each	43
4.8.1.4	list_for_each_entry	43
4.8.1.5	list_for_each_entry_continue	43
4.8.1.6	list_for_each_entry_safe	43
4.8.1.7	list_for_each_prev	44
4.8.1.8	list_for_each_safe	44
4.8.1.9	LIST_HEAD	44
4.8.1.10	LIST_HEAD_INIT	44
4.9	include/hail_log.h File Reference	44
4.9.1	Define Documentation	45
4.9.1.1	ATTR_PRINTF	45
4.9.1.2	HAIL_CRIT	45
4.9.1.3	HAIL_DEBUG	45
4.9.1.4	HAIL_ERR	45
4.9.1.5	HAIL_INFO	45
4.9.1.6	HAIL_VERBOSE	46
4.9.1.7	HAIL_WARN	46
4.10	include/hail_private.h File Reference	46
4.11	include/hstor.h File Reference	46
4.11.1	Define Documentation	48
4.11.1.1	ARRAY_SIZE	48

4.11.1.2	PATH_ESCAPE_MASK	48
4.11.1.3	QUERY_ESCAPE_MASK	48
4.11.2	Enumeration Type Documentation	48
4.11.2.1	anonymous enum	48
4.11.2.2	hstor_calling_format	48
4.11.2.3	ReqACLC	48
4.11.2.4	ReqQ	48
4.11.3	Function Documentation	49
4.11.3.1	hreq_acl_canned	49
4.11.3.2	hreq_free	49
4.11.3.3	hreq_hdr	49
4.11.3.4	hreq_hdr_push	49
4.11.3.5	hreq_is_query	49
4.11.3.6	hreq_query	49
4.11.3.7	hreq_sign	49
4.11.3.8	hstor_add_bucket	49
4.11.3.9	hstor_del	49
4.11.3.10	hstor_del_bucket	49
4.11.3.11	hstor_free	49
4.11.3.12	hstor_free_blist	49
4.11.3.13	hstor_free_bucket	49
4.11.3.14	hstor_free_keylist	49
4.11.3.15	hstor_free_object	49
4.11.3.16	hstor_get	49
4.11.3.17	hstor_get_inline	49
4.11.3.18	hstor_keys	49
4.11.3.19	hstor_list_buckets	49
4.11.3.20	hstor_new	50
4.11.3.21	hstor_put	50
4.11.3.22	hstor_put_inline	50
4.11.3.23	hstor_set_format	50
4.11.3.24	huri_field_escape	50
4.11.3.25	huri_field_unescape	50
4.11.3.26	huri_parse	50

4.11.3.27	<code>hutil_str2time</code>	50
4.11.3.28	<code>hutil_time2str</code>	50
4.12	<code>include/ncl.d.h</code> File Reference	50
4.12.1	Function Documentation	51
4.12.1.1	<code>ncl.d_close</code>	51
4.12.1.2	<code>ncl.d_del</code>	51
4.12.1.3	<code>ncl.d_get</code>	51
4.12.1.4	<code>ncl.d_get_meta</code>	51
4.12.1.5	<code>ncl.d_init</code>	51
4.12.1.6	<code>ncl.d_open</code>	51
4.12.1.7	<code>ncl.d_qlock</code>	51
4.12.1.8	<code>ncl.d_read_free</code>	51
4.12.1.9	<code>ncl.d_sess_close</code>	51
4.12.1.10	<code>ncl.d_sess_open</code>	51
4.12.1.11	<code>ncl.d_trylock</code>	51
4.12.1.12	<code>ncl.d_unlock</code>	51
4.12.1.13	<code>ncl.d_write</code>	51
4.13	<code>include/objcache.h</code> File Reference	51
4.13.1	Define Documentation	52
4.13.1.1	<code>objcache_get</code>	52
4.13.1.2	<code>objcache_get_dirty</code>	52
4.13.1.3	<code>OC_F_DIRTY</code>	52
4.13.2	Function Documentation	52
4.13.2.1	<code>__objcache_get</code>	52
4.13.2.2	<code>objcache_count</code>	52
4.13.2.3	<code>objcache_fini</code>	52
4.13.2.4	<code>objcache_init</code>	52
4.13.2.5	<code>objcache_put</code>	52
4.13.2.6	<code>objcache_test_dirty</code>	52

Chapter 1

Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

chunk_check_status	5
chunksrv_req	5
chunksrv_resp	6
chunksrv_resp_chkstat	7
chunksrv_resp_get	7
cld_dirent_cur	8
cld_timer	8
cld_timer_list	9
cldc_call_opts	
Per-operation application options	10
cldc_fh	
Open file handle associated with a session	10
cldc_host	
Information for a single CLD server host	11
cldc_msg	
Outgoing message, from client to server	12
cldc_node_metadata	13
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	17
hstor_blist	18
hstor_bucket	18
hstor_client	19
hstor_keylist	20

hstor_object	21
http_hdr	21
http_req	22
http_uri	23
list_head	24
nclد_fh	24
nclد_read	25
nclد_sess	26
objcache	27
objcache_entry	27
st_client	28
st_keylist	29
st_object	29

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

include/ chunk-private.h	31
include/ chunk_msg.h	31
include/ chunkc.h	34
include/ chunksrv.h	36
include/ cld-private.h	36
include/ cld_common.h	36
include/ cldc.h	38
include/ elist.h	42
include/ hail_log.h	44
include/ hail_private.h	46
include/ hstor.h	46
include/ ncld.h	50
include/ objcache.h	51

Chapter 3

Data Structure Documentation

3.1 `chunk_check_status` Struct Reference

```
#include <chunk_msg.h>
```

Data Fields

- `uint8_t` [state](#)
- `uint8_t` [pad](#) [3]
- `uint32_t` [count](#)
- `uint64_t` [lastdone](#)

3.1.1 Field Documentation

3.1.1.1 `uint32_t chunk_check_status::count`

3.1.1.2 `uint64_t chunk_check_status::lastdone`

3.1.1.3 `uint8_t chunk_check_status::pad[3]`

3.1.1.4 `uint8_t chunk_check_status::state`

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

- `include/`[chunk_msg.h](#)

3.2 `chunksrv_req` Struct Reference

```
#include <chunk_msg.h>
```

Data Fields

- uint8_t [magic](#) [[CHD_MAGIC_SZ](#)]
- uint8_t [op](#)
- uint8_t [flags](#)
- uint16_t [key_len](#)
- uint32_t [nonce](#)
- uint64_t [data_len](#)
- char [sig](#) [[CHD_SIG_SZ](#)]

3.2.1 Field Documentation

3.2.1.1 uint64_t chunksrv_req::data_len

3.2.1.2 uint8_t chunksrv_req::flags

3.2.1.3 uint16_t chunksrv_req::key_len

3.2.1.4 uint8_t chunksrv_req::magic[CHD_MAGIC_SZ]

3.2.1.5 uint32_t chunksrv_req::nonce

3.2.1.6 uint8_t chunksrv_req::op

3.2.1.7 char chunksrv_req::sig[CHD_SIG_SZ]

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

- [include/chunk_msg.h](#)

3.3 chunksrv_resp Struct Reference

```
#include <chunk_msg.h>
```

Data Fields

- uint8_t [magic](#) [[CHD_MAGIC_SZ](#)]
- uint8_t [resp_code](#)
- uint8_t [rsv1](#) [3]
- uint32_t [nonce](#)
- uint64_t [data_len](#)
- unsigned char [hash](#) [[CHD_CSUM_SZ](#)]

3.3.1 Field Documentation

3.3.1.1 `uint64_t chunksrv_resp::data_len`

3.3.1.2 `unsigned char chunksrv_resp::hash[CHD_CSUM_SZ]`

3.3.1.3 `uint8_t chunksrv_resp::magic[CHD_MAGIC_SZ]`

3.3.1.4 `uint32_t chunksrv_resp::nonce`

3.3.1.5 `uint8_t chunksrv_resp::resp_code`

3.3.1.6 `uint8_t chunksrv_resp::rsv1[3]`

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

- `include/chunk_msg.h`

3.4 chunksrv_resp_chkstat Struct Reference

```
#include <chunk_msg.h>
```

Data Fields

- struct `chunksrv_resp` `resp`
- struct `chunk_check_status` `chkstat`

3.4.1 Field Documentation

3.4.1.1 `struct chunk_check_status chunksrv_resp_chkstat::chkstat`

3.4.1.2 `struct chunksrv_resp chunksrv_resp_chkstat::resp`

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

- `include/chunk_msg.h`

3.5 chunksrv_resp_get Struct Reference

```
#include <chunk_msg.h>
```

Data Fields

- struct [chunksrv_resp](#) [resp](#)
- [uint64_t](#) [mtime](#)

3.5.1 Field Documentation

3.5.1.1 [uint64_t](#) [chunksrv_resp_get::mtime](#)

3.5.1.2 struct [chunksrv_resp](#) [chunksrv_resp_get::resp](#)

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

- include/[chunk_msg.h](#)

3.6 [cld_dirent_cur](#) Struct Reference

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

Data Fields

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

3.6.1 Field Documentation

3.6.1.1 const void* [cld_dirent_cur::p](#)

3.6.1.2 [size_t](#) [cld_dirent_cur::tmp_len](#)

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

- include/[cldc.h](#)

3.7 [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]

3.7.1 Field Documentation

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

3.7.1.2 time_t [cld_timer::expires](#)

3.7.1.3 bool [cld_timer::fired](#)

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

3.7.1.5 bool [cld_timer::on_list](#)

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

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

- include/[cld_common.h](#)

3.8 cld_timer_list Struct Reference

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

Data Fields

- GList * [list](#)
- time_t [runmark](#)

3.8.1 Field Documentation

3.8.1.1 GList* [cld_timer_list::list](#)

3.8.1.2 time_t [cld_timer_list::runmark](#)

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

- include/[cld_common.h](#)

3.9 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`

3.9.1 Detailed Description

per-operation application options

3.9.2 Field Documentation

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

3.9.2.2 `void* cldc_call_opts::private`

3.9.2.3 `struct cld_msg_get_resp cldc_call_opts::resp`

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

- `include/cldc.h`

3.10 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`

3.10.1 Detailed Description

an open file handle associated with a session

3.10.2 Field Documentation

3.10.2.1 `uint64_t cldc_fh::fh`

3.10.2.2 `struct cldc_session* cldc_fh::sess`

3.10.2.3 `bool cldc_fh::valid`

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

- `include/cldc.h`

3.11 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`

3.11.1 Detailed Description

Information for a single CLD server host.

3.11.2 Field Documentation

3.11.2.1 `char* cldc_host::host`

3.11.2.2 `unsigned short cldc_host::port`

3.11.2.3 `unsigned int cldc_host::prio`

3.11.2.4 `unsigned int cldc_host::weight`

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

- `include/cldc.h`

3.12 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]

3.12.1 Detailed Description

an outgoing message, from client to server

3.12.2 Field Documentation

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

3.12.2.2 `void* cldc_msg::cb_private`

3.12.2.3 `struct cldc_call_opts cldc_msg::copts`

3.12.2.4 `bool cldc_msg::done`

3.12.2.5 `time_t cldc_msg::expire_time`

3.12.2.6 `int cldc_msg::n_pkts`

3.12.2.7 `enum cld_msg_op cldc_msg::op`

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

3.12.2.9 `struct cldc_session* cldc_msg::sess`

3.12.2.10 uint64_t cldc_msg::xid

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

- include/[cldc.h](#)

3.13 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](#)

3.13.1 Field Documentation

3.13.1.1 int cldc_node_metadata::flags

3.13.1.2 const char* cldc_node_metadata::inode_name

3.13.1.3 quad_t cldc_node_metadata::inum

3.13.1.4 quad_t cldc_node_metadata::time_create

3.13.1.5 quad_t cldc_node_metadata::time_modify

3.13.1.6 quad_t cldc_node_metadata::vers

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

- include/[cldc.h](#)

3.14 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)`

3.14.1 Detailed Description

application-supplied facilities

3.14.2 Field Documentation

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

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

3.14.2.3 `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`

3.15 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]`

3.15.1 Field Documentation

3.15.1.1 `char cldc_pkt_info::data[0]`

3.15.1.2 int cldc_pkt_info::hdr_len

3.15.1.3 int cldc_pkt_info::pkt_len

3.15.1.4 int cldc_pkt_info::retries

3.15.1.5 char cldc_pkt_info::user[CLD_MAX_USERNAME]

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

- include/cldc.h

3.16 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
- GList * cfh
- 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]

3.16.1 Detailed Description

a single CLD client session

3.16.2 Field Documentation

- 3.16.2.1 `uint8_t cldc_session::addr[64]`
- 3.16.2.2 `size_t cldc_session::addr_len`
- 3.16.2.3 `GList* cldc_session::cfh`
- 3.16.2.4 `bool cldc_session::confirmed`
- 3.16.2.5 `time_t cldc_session::expire_time`
- 3.16.2.6 `bool cldc_session::expired`
- 3.16.2.7 `char cldc_session::inode_name_temp[CLD.INODE_NAME_MAX]`
- 3.16.2.8 `struct hail_log cldc_session::log`
- 3.16.2.9 `char cldc_session::msg_buf[CLD.MAX_MSG_SZ]`
- 3.16.2.10 `unsigned int cldc_session::msg_buf_len`
- 3.16.2.11 `enum cld_msg_op cldc_session::msg_buf_op`
- 3.16.2.12 `time_t cldc_session::msg_scan_time`
- 3.16.2.13 `uint64_t cldc_session::next_seqid_in`
- 3.16.2.14 `uint64_t cldc_session::next_seqid_in_tr`
- 3.16.2.15 `uint64_t cldc_session::next_seqid_out`
- 3.16.2.16 `struct cldc_ops* cldc_session::ops`
- 3.16.2.17 `GList* cldc_session::out_msg`
- 3.16.2.18 `char cldc_session::payload[CLD.MAX_PAYLOAD_SZ]`
- 3.16.2.19 `void* cldc_session::private`
- 3.16.2.20 `char cldc_session::secret_key[CLD.MAX_SECRET_KEY]`
- 3.16.2.21 `uint8_t cldc_session::sid[CLD.SID_SZ]`
- 3.16.2.22 `char cldc_session::user[CLD.MAX_USERNAME]`

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

- include/[cldc.h](#)

3.17 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](#)

3.17.1 Detailed Description

A UDP implementation of the CLD client protocol.

3.17.2 Field Documentation

3.17.2.1 uint8_t cldc_udp::addr[64]

3.17.2.2 size_t cldc_udp::addr_len

3.17.2.3 int(* cldc_udp::cb)(struct cldc_session *, void *)

3.17.2.4 void* cldc_udp::cb_private

3.17.2.5 int cldc_udp::fd

3.17.2.6 struct cldc_session* cldc_udp::sess

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

- include/[cldc.h](#)

3.18 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](#)

3.18.1 Field Documentation

3.18.1.1 void(*) boo [hail_log::debug](#))

3.18.1.2 void(* [hail_log::func](#))(int prio, const char *fmt,...) [ATTR_PRINTF\(2](#)

3.18.1.3 bool [hail_log::verbose](#)

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

- include/[hail_log.h](#)

3.19 hstor_blist Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [own_id](#)
- char * [own_name](#)
- GList * [list](#)

3.19.1 Field Documentation

3.19.1.1 GList* [hstor_blist::list](#)

3.19.1.2 char* [hstor_blist::own_id](#)

3.19.1.3 char* [hstor_blist::own_name](#)

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

- include/[hstor.h](#)

3.20 hstor_bucket Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [name](#)
- char * [time_create](#)

3.20.1 Field Documentation

3.20.1.1 char* `hstor_bucket::name`

3.20.1.2 char* `hstor_bucket::time_create`

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

- `include/hstor.h`

3.21 hstor_client Struct Reference

```
#include <hstor.h>
```

Data Fields

- CURL * [curl](#)
- char * [acc](#)
- char * [host](#)
- char * [user](#)
- char * [key](#)
- bool [verbose](#)
- bool [subdomain](#)

3.21.1 Field Documentation

3.21.1.1 char* `hstor_client::acc`

3.21.1.2 CURL* `hstor_client::curl`

3.21.1.3 char* `hstor_client::host`

3.21.1.4 char* `hstor_client::key`

3.21.1.5 bool `hstor_client::subdomain`

3.21.1.6 char* `hstor_client::user`

3.21.1.7 bool hstor_client::verbose

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

- include/hstor.h

3.22 hstor_keylist Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [name](#)
- char * [prefix](#)
- char * [marker](#)
- char * [delim](#)
- unsigned int [max_keys](#)
- bool [trunc](#)
- GList * [contents](#)
- GList * [common_pfx](#)

3.22.1 Field Documentation

3.22.1.1 GList* hstor_keylist::common_pfx

3.22.1.2 GList* hstor_keylist::contents

3.22.1.3 char* hstor_keylist::delim

3.22.1.4 char* hstor_keylist::marker

3.22.1.5 unsigned int hstor_keylist::max_keys

3.22.1.6 char* hstor_keylist::name

3.22.1.7 char* hstor_keylist::prefix

3.22.1.8 bool hstor_keylist::trunc

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

- include/hstor.h

3.23 hstor_object Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [key](#)
- char * [time_mod](#)
- char * [etag](#)
- uint64_t [size](#)
- char * [storage](#)
- char * [own_id](#)
- char * [own_name](#)

3.23.1 Field Documentation

3.23.1.1 char* hstor_object::etag

3.23.1.2 char* hstor_object::key

3.23.1.3 char* hstor_object::own_id

3.23.1.4 char* hstor_object::own_name

3.23.1.5 uint64_t hstor_object::size

3.23.1.6 char* hstor_object::storage

3.23.1.7 char* hstor_object::time_mod

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

- include/[hstor.h](#)

3.24 http_hdr Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [key](#)
- char * [val](#)

3.24.1 Field Documentation

3.24.1.1 char* http_hdr::key

3.24.1.2 char* http_hdr::val

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

- include/hstor.h

3.25 http_req Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [method](#)
- struct [http_uri](#) uri
- int [major](#)
- int [minor](#)
- char * [orig_path](#)
- unsigned int [n_hdr](#)
- struct [http_hdr](#) hdr [[HREQ_MAX_HDR](#)]

3.25.1 Field Documentation

3.25.1.1 struct http_hdr http_req::hdr[HREQ_MAX_HDR]

3.25.1.2 int http_req::major

3.25.1.3 char* http_req::method

3.25.1.4 int http_req::minor

3.25.1.5 unsigned int http_req::n_hdr

3.25.1.6 char* http_req::orig_path

3.25.1.7 struct http_uri http_req::uri

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

- include/hstor.h

3.26 http_uri Struct Reference

```
#include <hstor.h>
```

Data Fields

- char * [scheme](#)
- unsigned int [scheme_len](#)
- char * [userinfo](#)
- unsigned int [userinfo_len](#)
- char * [hostname](#)
- unsigned int [hostname_len](#)
- unsigned int [port](#)
- char * [path](#)
- unsigned int [path_len](#)
- char * [query](#)
- unsigned int [query_len](#)
- char * [fragment](#)
- unsigned int [fragment_len](#)

3.26.1 Field Documentation

3.26.1.1 char* [http_uri::fragment](#)

3.26.1.2 unsigned int [http_uri::fragment_len](#)

3.26.1.3 char* [http_uri::hostname](#)

3.26.1.4 unsigned int [http_uri::hostname_len](#)

3.26.1.5 char* [http_uri::path](#)

3.26.1.6 unsigned int [http_uri::path_len](#)

3.26.1.7 unsigned int [http_uri::port](#)

3.26.1.8 char* [http_uri::query](#)

3.26.1.9 unsigned int [http_uri::query_len](#)

3.26.1.10 char* [http_uri::scheme](#)

3.26.1.11 unsigned int [http_uri::scheme_len](#)

3.26.1.12 char* [http_uri::userinfo](#)

3.26.1.13 unsigned int http_uri::userinfo_len

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

- include/hstor.h

3.27 list_head Struct Reference

```
#include <elist.h>
```

Data Fields

- struct [list_head](#) * next
- struct [list_head](#) * prev

3.27.1 Field Documentation

3.27.1.1 struct [list_head](#)* [list_head::next](#)

3.27.1.2 struct [list_head](#) * [list_head::prev](#)

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

- include/elist.h

3.28 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](#)

3.28.1 Field Documentation

3.28.1.1 int ncld_fh::errc

3.28.1.2 void* ncld_fh::event_arg

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

3.28.1.4 unsigned int ncld_fh::event_mask

3.28.1.5 struct cldc_fh* ncld_fh::fh

3.28.1.6 bool ncld_fh::is_open

3.28.1.7 int ncld_fh::nios

3.28.1.8 struct ncld_sess* ncld_fh::sess

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

- include/[ncld.h](#)

3.29 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](#)

3.29.1 Field Documentation

3.29.1.1 int ncld_read::errc

3.29.1.2 struct ncld_fh* ncld_read::fh

3.29.1.3 bool ncld_read::is_done

3.29.1.4 long ncld_read::length

3.29.1.5 struct `cldc_node_metadata` `ncld_read::meta`

3.29.1.6 const void* `ncld_read::ptr`

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

- include/[ncld.h](#)

3.30 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](#)

3.30.1 Field Documentation

3.30.1.1 GCond* `ncld_sess::cond`

3.30.1.2 int `ncld_sess::errc`

3.30.1.3 void(* `ncld_sess::event`)(void *, unsigned int)

3.30.1.4 void* `ncld_sess::event_arg`

3.30.1.5 GList* `ncld_sess::handles`

3.30.1.6 char* `ncld_sess::host`

3.30.1.7 `bool ncld_sess::is_up`

3.30.1.8 `GMutex* ncld_sess::mutex`

3.30.1.9 `bool ncld_sess::open_done`

3.30.1.10 `unsigned short ncld_sess::port`

3.30.1.11 `GThread* ncld_sess::thread`

3.30.1.12 `struct cld_timer_list ncld_sess::tlist`

3.30.1.13 `int ncld_sess::to_thread[2]`

3.30.1.14 `struct cldc_udp* ncld_sess::udp`

3.30.1.15 `struct cld_timer ncld_sess::udp_timer`

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

- `include/ncld.h`

3.31 objcache Struct Reference

```
#include <objcache.h>
```

Data Fields

- `GMutex *` `lock`
- `GHashTable *` `table`

3.31.1 Field Documentation

3.31.1.1 `GMutex* objcache::lock`

3.31.1.2 `GHashTable* objcache::table`

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

- `include/objcache.h`

3.32 objcache_entry Struct Reference

```
#include <objcache.h>
```

Data Fields

- unsigned int [hash](#)
- unsigned int [flags](#)
- int [ref](#)

3.32.1 Field Documentation

3.32.1.1 unsigned int `objcache_entry::flags`

3.32.1.2 unsigned int `objcache_entry::hash`

3.32.1.3 int `objcache_entry::ref`

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

- `include/objcache.h`

3.33 `st_client` Struct Reference

```
#include <chunkc.h>
```

Data Fields

- char * [host](#)
- char * [user](#)
- char * [key](#)
- bool [verbose](#)
- int [fd](#)
- SSL_CTX * [ssl_ctx](#)
- SSL * [ssl](#)
- char [req_buf](#) [sizeof(struct [chunksrv_req](#))+CHD_KEY_SZ]

3.33.1 Field Documentation

3.33.1.1 int `st_client::fd`

3.33.1.2 char* `st_client::host`

3.33.1.3 char* `st_client::key`

3.33.1.4 char `st_client::req_buf`[sizeof(struct [chunksrv_req](#))+CHD_KEY_SZ]

3.33.1.5 SSL* `st_client::ssl`

3.33.1.6 SSL_CTX* st_client::ssl_ctx

3.33.1.7 char* st_client::user

3.33.1.8 bool st_client::verbose

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

- include/[chunkc.h](#)

3.34 st_keylist Struct Reference

```
#include <chunkc.h>
```

Data Fields

- char * [name](#)
- GList * [contents](#)

3.34.1 Field Documentation

3.34.1.1 GList* st_keylist::contents

3.34.1.2 char* st_keylist::name

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

- include/[chunkc.h](#)

3.35 st_object Struct Reference

```
#include <chunkc.h>
```

Data Fields

- char * [name](#)
- char * [time_mod](#)
- char * [etag](#)
- uint64_t [size](#)
- char * [owner](#)

3.35.1 Field Documentation

3.35.1.1 `char* st_object::etag`

3.35.1.2 `char* st_object::name`

3.35.1.3 `char* st_object::owner`

3.35.1.4 `uint64_t st_object::size`

3.35.1.5 `char* st_object::time_mod`

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

- `include/chunkc.h`

Chapter 4

File Documentation

4.1 include/chunk-private.h File Reference

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

Defines

- #define [MDB_TPATH_FMT](#) "%s/%X"
- #define [BAD_TPATH_FMT](#) "%s/bad"
- #define [PREFIX_LEN](#) 3

4.1.1 Define Documentation

4.1.1.1 #define [BAD_TPATH_FMT](#) "%s/bad"

4.1.1.2 #define [MDB_TPATH_FMT](#) "%s/%X"

4.1.1.3 #define [PREFIX_LEN](#) 3

4.2 include/chunk_msg.h File Reference

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

Data Structures

- struct [chunksrv_req](#)
- struct [chunksrv_resp](#)
- struct [chunksrv_resp_get](#)
- struct [chunk_check_status](#)
- struct [chunksrv_resp_chkstat](#)

Defines

- #define `CHUNKD_MAGIC` "CHUNKDv1"

Enumerations

- enum { `CHD_MAGIC_SZ` = 8, `CHD_USER_SZ` = 64, `CHD_KEY_SZ` = 1024, `CHD_CSUM_SZ` = 20, `CHD_SIG_SZ` = 64 }
- enum `chunksrv_ops` { `CHO_NOP` = 0, `CHO_GET` = 1, `CHO_GET_META` = 2, `CHO_PUT` = 3, `CHO_DEL` = 4, `CHO_LIST` = 5, `CHO_LOGIN` = 6, `CHO_TABLE_OPEN` = 7, `CHO_CHECK_START` = 8, `CHO_CHECK_STATUS` = 9, `CHO_START_TLS` = 10, `CHO_CP` = 11 }
- enum `chunk_errcode` { `che_Success` = 0, `che_AccessDenied` = 1, `che_InternalError` = 2, `che_InvalidArgument` = 3, `che_InvalidURI` = 4, `che_NoSuchKey` = 5, `che_SignatureDoesNotMatch` = 6, `che_InvalidKey` = 7, `che_InvalidTable` = 8, `che_Busy` = 9, `che_KeyExists` = 10 }
- enum `chunk_flags` { `CHF_SYNC` = (1 << 0), `CHF_TBL_CREAT` = (1 << 1), `CHF_TBL_EXCL` = (1 << 2) }
- enum `chunk_check_state` { `chk_Off`, `chk_Idle`, `chk_Active` }

4.2.1 Define Documentation

4.2.1.1 #define `CHUNKD_MAGIC` "CHUNKDv1"

4.2.2 Enumeration Type Documentation

4.2.2.1 anonymous enum

Enumerator:

CHD_MAGIC_SZ

CHD_USER_SZ

CHD_KEY_SZ

CHD_CSUM_SZ

CHD_SIG_SZ

4.2.2.2 enum `chunk_check_state`

Enumerator:

chk_Off

chk_Idle

chk_Active

4.2.2.3 enum chunk_errcode

Enumerator:

che_Success
che_AccessDenied
che_InternalError
che_InvalidArgument
che_InvalidURI
che_NoSuchKey
che_SignatureDoesNotMatch
che_InvalidKey
che_InvalidTable
che_Busy
che_KeyExists

4.2.2.4 enum chunk_flags

Enumerator:

CHF_SYNC
CHF_TBL_CREAT
CHF_TBL_EXCL

4.2.2.5 enum chunksrv_ops

Enumerator:

CHO_NOP
CHO_GET
CHO_GET_META
CHO_PUT
CHO_DEL
CHO_LIST
CHO_LOGIN
CHO_TABLE_OPEN
CHO_CHECK_START
CHO_CHECK_STATUS
CHO_START_TLS
CHO_CP

4.3 include/chunkc.h File Reference

```
#include <sys/types.h> #include <openssl/ssl.h> #include
<stdbool.h> #include <stdint.h> #include <string.h> ×
#include <glib.h> #include <chunk_msg.h>
```

Data Structures

- struct [st_object](#)
- struct [st_keylist](#)
- struct [st_client](#)

Functions

- void [stc_free](#) (struct [st_client](#) *stc)
- void [stc_free_keylist](#) (struct [st_keylist](#) *keylist)
- void [stc_free_object](#) (struct [st_object](#) *obj)
- void [stc_init](#) (void)
- struct [st_client](#) * [stc_new](#) (const char *service_host, int port, const char *user, const char *secret_key, bool encrypt)
- bool [stc_table_open](#) (struct [st_client](#) *stc, const void *key, size_t key_len, uint32_t flags)
- bool [stc_get](#) (struct [st_client](#) *stc, const void *key, size_t key_len, size_t(*write_cb)(void *, size_t, size_t, void *), void *user_data)
- void * [stc_get_inline](#) (struct [st_client](#) *stc, const void *key, size_t key_len, size_t *len)
- bool [stc_get_start](#) (struct [st_client](#) *stc, const void *key, size_t key_len, int *pfd, uint64_t *len)
- size_t [stc_get_recv](#) (struct [st_client](#) *stc, void *data, size_t len)
- bool [stc_put](#) (struct [st_client](#) *stc, const void *key, size_t key_len, size_t(*read_cb)(void *, size_t, size_t, void *), uint64_t len, void *user_data, uint32_t flags)
- bool [stc_put_start](#) (struct [st_client](#) *stc, const void *key, size_t key_len, uint64_t cont_len, int *pfd, uint32_t flags)
- size_t [stc_put_send](#) (struct [st_client](#) *stc, void *data, size_t len)
- bool [stc_put_sync](#) (struct [st_client](#) *stc)
- bool [stc_put_inline](#) (struct [st_client](#) *stc, const void *key, size_t key_len, void *data, uint64_t len, uint32_t flags)
- bool [stc_cp](#) (struct [st_client](#) *stc, const void *dest_key, size_t dest_key_len, const void *src_key, size_t src_key_len)
- bool [stc_del](#) (struct [st_client](#) *stc, const void *key, size_t key_len)
- bool [stc_ping](#) (struct [st_client](#) *stc)
- bool [stc_check_start](#) (struct [st_client](#) *stc)
- bool [stc_check_status](#) (struct [st_client](#) *stc, struct [chunk_check_status](#) *out)
- struct [st_keylist](#) * [stc_keys](#) (struct [st_client](#) *stc)
- int [stc_readport](#) (const char *fname)

4.3.1 Function Documentation

- 4.3.1.1 `bool stc_check_start (struct st_client * stc)`
- 4.3.1.2 `bool stc_check_status (struct st_client * stc, struct chunk_check_status * out)`
- 4.3.1.3 `bool stc_cp (struct st_client * stc, const void * dest_key, size_t dest_key_len, const void * src_key, size_t src_key_len)`
- 4.3.1.4 `bool stc_del (struct st_client * stc, const void * key, size_t key_len)`
- 4.3.1.5 `void stc_free (struct st_client * stc)`
- 4.3.1.6 `void stc_free_keylist (struct st_keylist * keylist)`
- 4.3.1.7 `void stc_free_object (struct st_object * obj)`
- 4.3.1.8 `bool stc_get (struct st_client * stc, const void * key, size_t key_len, size_t(*) (void *, size_t, size_t, void *) write_cb, void * user_data)`
- 4.3.1.9 `void* stc_get_inline (struct st_client * stc, const void * key, size_t key_len, size_t * len)`
- 4.3.1.10 `size_t stc_get_recv (struct st_client * stc, void * data, size_t len)`
- 4.3.1.11 `bool stc_get_start (struct st_client * stc, const void * key, size_t key_len, int * pfd, uint64_t * len)`
- 4.3.1.12 `void stc_init (void)`
- 4.3.1.13 `struct st_keylist* stc_keys (struct st_client * stc)` [read]
- 4.3.1.14 `struct st_client* stc_new (const char * service_host, int port, const char * user, const char * secret_key, bool encrypt)` [read]
- 4.3.1.15 `bool stc_ping (struct st_client * stc)`
- 4.3.1.16 `bool stc_put (struct st_client * stc, const void * key, size_t key_len, size_t(*) (void *, size_t, size_t, void *) read_cb, uint64_t len, void * user_data, uint32_t flags)`
- 4.3.1.17 `bool stc_put_inline (struct st_client * stc, const void * key, size_t key_len, void * data, uint64_t len, uint32_t flags)`
- 4.3.1.18 `size_t stc_put_send (struct st_client * stc, void * data, size_t len)`
- 4.3.1.19 `bool stc_put_start (struct st_client * stc, const void * key, size_t key_len, uint64_t cont_len, int * pfd, uint32_t flags)`

4.3.1.20 `bool stc_put_sync (struct st_client * stc)`

4.3.1.21 `int stc_readport (const char * fname)`

4.3.1.22 `bool stc_table_open (struct st_client * stc, const void * key, size_t key_len, uint32_t flags)`

4.4 include/chunksrv.h File Reference

```
#include <chunk_msg.h>
```

Functions

- `size_t req_len (const struct chunksrv_req *req)`
- `void chreq_sign (struct chunksrv_req *req, const char *key, char *b64hmac_out)`

4.4.1 Function Documentation

4.4.1.1 `void chreq_sign (struct chunksrv_req * req, const char * key, char * b64hmac_out)`

4.4.1.2 `size_t req_len (const struct chunksrv_req * req)`

4.5 include/cld-private.h File Reference

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

4.6 include/cld_common.h File Reference

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

Data Structures

- `struct cld_timer`
- `struct cld_timer_list`

Defines

- `#define CLD_ALIGN8(n) ((8 - ((n) & 7)) & 7)`
- `#define SIDFMT "%016lX"`

- #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 `cld_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.

4.6.1 Define Documentation

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

4.6.1.2 #define `CLD_PKT_FTR_LEN` `sizeof(struct cld_pkt_ftr)`

Length of the packet footer.

This size is fixed

4.6.1.3 #define `PKT_HDR_TO_STR_SCRATCH_LEN` 128

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

4.6.1.5 #define `SIDFMT` `"%016lX"`

4.6.2 Function Documentation

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

Footer that appears at the end of each packet.

< packet sequence ID

< packet signature

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

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

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

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

4.6.2.6 `const char* cld_opstr (enum cld_msg_op)`

4.6.2.7 `const char* cld_pkt_hdr_to_str (char * scratch, const char * pkt_hdr, size_t pkt_len)`

4.6.2.8 `void cld_rand64 (void * p)`

4.6.2.9 `int cld_readport (const char * fname)`

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

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

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

4.6.2.13 `time_t cld_timers_run (struct cld_timer_list * tlist)`

4.7 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)

4.7.1 Function Documentation

- 4.7.1.1 int [cldc_close](#) (struct [cldc_fh](#) * fh, const struct [cldc_call_opts](#) * copts)
- 4.7.1.2 void [cldc_copts_get_data](#) (const struct [cldc_call_opts](#) * copts, char ** data, size_t * data_len)
- 4.7.1.3 void [cldc_copts_get_metadata](#) (const struct [cldc_call_opts](#) * copts, struct [cldc_node_metadata](#) * md)
- 4.7.1.4 int [cldc_del](#) (struct [cldc_session](#) * sess, const struct [cldc_call_opts](#) * copts, const char * pathname)
- 4.7.1.5 int [cldc_dirent_count](#) (const void * data, size_t data_len)
- 4.7.1.6 void [cldc_dirent_cur_fini](#) (struct [cld_dirent_cur](#) * dc)
- 4.7.1.7 void [cldc_dirent_cur_init](#) (struct [cld_dirent_cur](#) * dc, const void * buf, size_t buflen)
- 4.7.1.8 int [cldc_dirent_first](#) (struct [cld_dirent_cur](#) * dc)
- 4.7.1.9 char* [cldc_dirent_name](#) (struct [cld_dirent_cur](#) * dc)
- 4.7.1.10 int [cldc_dirent_next](#) (struct [cld_dirent_cur](#) * dc)
- 4.7.1.11 int [cldc_end_sess](#) (struct [cldc_session](#) * sess, const struct [cldc_call_opts](#) * copts)
- 4.7.1.12 int [cldc_get](#) (struct [cldc_fh](#) * fh, const struct [cldc_call_opts](#) * copts, bool metadata_only)
- 4.7.1.13 int [cldc_getaddr](#) (GList ** host_list, const char * thishost, struct [hail_log](#) * log)

- 4.7.1.14 void `cldc_init` (void)
- 4.7.1.15 void `cldc_kill_sess` (struct `cldc_session` * *sess*)
- 4.7.1.16 int `cldc_lock` (struct `cldc_fh` * *fh*, const struct `cldc_call_opts` * *copts*, uint32_t *lock_flags*, bool *wait_for_lock*)
- 4.7.1.17 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*)
- 4.7.1.18 int `cldc_nop` (struct `cldc_session` * *sess*, const struct `cldc_call_opts` * *copts*)
- 4.7.1.19 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*)
- 4.7.1.20 int `cldc_put` (struct `cldc_fh` * *fh*, const struct `cldc_call_opts` * *copts*, const void * *data*, size_t *data_len*)
- 4.7.1.21 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

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

Returns

Zero for success, non-zero on error

- 4.7.1.22 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*)
- 4.7.1.23 void `cldc_udp_free` (struct `cldc_udp` * *udp*)
- 4.7.1.24 int `cldc_udp_new` (const char * *hostname*, int *port*, struct `cldc_udp` ** *udp_out*)

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

4.7.1.26 `int cldc_udp_receive_pkt (struct cldc_udp * udp)`

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

4.8 include/elist.h File Reference

Data Structures

- struct [list_head](#)

Defines

- #define [LIST_HEAD_INIT](#)(name) { &(amp;name), &(name) }
- #define [LIST_HEAD](#)(name) struct [list_head](#) name = [LIST_HEAD_INIT](#)(name)
- #define [INIT_LIST_HEAD](#)(ptr)
- #define [list_entry](#)(ptr, type, member) ((type *)((char *) (ptr) - (unsigned long)&((type *)0)->member)))
list_entry - get the struct for this entry : the &struct [list_head](#) pointer.
- #define [list_for_each](#)(pos, head)
list_for_each - iterate over a list : the &struct [list_head](#) to use as a loop counter.
- #define [list_for_each_prev](#)(pos, head)
list_for_each_prev - iterate over a list backwards : the &struct [list_head](#) to use as a loop counter.
- #define [list_for_each_safe](#)(pos, n, head)
list_for_each_safe - iterate over a list safe against removal of list entry : the &struct [list_head](#) to use as a loop counter.
- #define [list_for_each_entry](#)(pos, head, member)
list_for_each_entry - iterate over list of given type : the type * to use as a loop counter.
- #define [list_for_each_entry_safe](#)(pos, n, head, member)
list_for_each_entry_safe - iterate over list of given type safe against removal of list entry : the type * to use as a loop counter.
- #define [list_for_each_entry_continue](#)(pos, head, member)
list_for_each_entry_continue - iterate over list of given type continuing after existing point : the type * to use as a loop counter.

4.8.1 Define Documentation

4.8.1.1 `#define INIT_LIST_HEAD(ptr)`

Value:

```
do { \
    (ptr)->next = (ptr); (ptr)->prev = (ptr); \
} while (0)
```

4.8.1.2 `#define list_entry(ptr, type, member) ((type *)((char *)(ptr)-(unsigned long)&((type *)0)->member)))`

`list_entry` - get the struct for this entry : the &struct `list_head` pointer.

: the type of the struct this is embedded in. : the name of the `list_struct` within the struct.

4.8.1.3 `#define list_for_each(pos, head)`

Value:

```
for (pos = (head)->next; pos != (head); \
     pos = pos->next)
```

`list_for_each` - iterate over a list : the &struct `list_head` to use as a loop counter.

: the head for your list.

4.8.1.4 `#define list_for_each_entry(pos, head, member)`

Value:

```
for (pos = list_entry((head)->next, typeof(*pos), member); \
     &pos->member != (head); \
     pos = list_entry(pos->member.next, typeof(*pos), member))
```

`list_for_each_entry` - iterate over list of given type : the type * to use as a loop counter.

: the head for your list. : the name of the `list_struct` within the struct.

4.8.1.5 `#define list_for_each_entry_continue(pos, head, member)`

Value:

```
for (pos = list_entry(pos->member.next, typeof(*pos), member), \
     prefetch(pos->member.next); \
     &pos->member != (head); \
     pos = list_entry(pos->member.next, typeof(*pos), member), \
     prefetch(pos->member.next))
```

`list_for_each_entry_continue` - iterate over list of given type continuing after existing point : the type * to use as a loop counter.

: the head for your list. : the name of the `list_struct` within the struct.

4.8.1.6 `#define list_for_each_entry_safe(pos, n, head, member)`

Value:

```
for (pos = list_entry((head)->next, typeof(*pos), member), \
    n = list_entry(pos->member.next, typeof(*pos), member); \
    &pos->member != (head); \
    pos = n, n = list_entry(n->member.next, typeof(*n), member))
```

`list_for_each_entry_safe` - iterate over list of given type safe against removal of list entry : the type * to use as a loop counter.

: another type * to use as temporary storage : the head for your list. : the name of the `list_struct` within the struct.

4.8.1.7 #define list_for_each_prev(pos, head)

Value:

```
for (pos = (head)->prev; pos != (head); \
    pos = pos->prev)
```

`list_for_each_prev` - iterate over a list backwards : the &struct [list_head](#) to use as a loop counter.

: the head for your list.

4.8.1.8 #define list_for_each_safe(pos, n, head)

Value:

```
for (pos = (head)->next, n = pos->next; pos != (head); \
    pos = n, n = pos->next)
```

`list_for_each_safe` - iterate over a list safe against removal of list entry : the &struct [list_head](#) to use as a loop counter.

: another &struct [list_head](#) to use as temporary storage : the head for your list.

4.8.1.9 #define LIST_HEAD(name) struct list_head name = LIST_HEAD_INIT(name)

4.8.1.10 #define LIST_HEAD_INIT(name) { &(name), &(name) }

4.9 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.

4.9.1 Define Documentation

4.9.1.1 #define [ATTR_PRINTF](#)(x, y)

4.9.1.2 #define [HAIL_CRIT](#)(log, ...) (log)->func(LOG_CRIT, __VA_ARGS__)

Print out a critical warning message.

4.9.1.3 #define [HAIL_DEBUG](#)(log, ...)

Value:

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

Print out an application debug message if enabled.

4.9.1.4 #define [HAIL_ERR](#)(log, ...) (log)->func(LOG_ERR, __VA_ARGS__)

Print out an error message.

4.9.1.5 #define [HAIL_INFO](#)(log, ...) (log)->func(LOG_INFO, __VA_ARGS__)

Print out an informational log message.

4.9.1.6 #define HAIL_VERBOSE(log, ...)

Value:

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

Print out a CLD session debug message if enabled.

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

Print out a warning message.

4.10 include/hail_private.h File Reference

```
#include "hail-config.h" #include <rpc/xdr.h>
```

4.11 include/hstor.h File Reference

```
#include <stdbool.h> #include <stdint.h> #include <curl/curl.h> #include <glib.h>
```

Data Structures

- struct [hstor_client](#)
- struct [hstor_bucket](#)
- struct [hstor_blist](#)
- struct [hstor_object](#)
- struct [hstor_keylist](#)
- struct [http_uri](#)
- struct [http_hdr](#)
- struct [http_req](#)

Defines

- #define [ARRAY_SIZE](#)(arr) (sizeof(arr) / sizeof((arr)[0]))
- #define [PATH_ESCAPE_MASK](#) 0x02
- #define [QUERY_ESCAPE_MASK](#) 0x04

Enumerations

- enum [hstor_calling_format](#) { HFMT_ORDINARY, HFMT_SUBDOMAIN }
- enum { HREQ_MAX_HDR = 128 }
- enum [ReqQ](#) { URIQ_ACL, URIQ_LOCATION, URIQ_LOGGING, URIQ_TORRENT, URIQNUM }
- enum [ReqACL](#) { ACLC_PRIV, ACLC_PUB_R, ACLC_PUB_RW, ACLC_AUTH_R, ACLCNUM }

Functions

- char * [hutil_time2str](#) (char *buf, int len, time_t time)
- time_t [hutil_str2time](#) (const char *timestr)
- int [hreq_hdr_push](#) (struct [http_req](#) *req, char *key, char *val)
- char * [hreq_hdr](#) (struct [http_req](#) *req, const char *key)
- void [hreq_sign](#) (struct [http_req](#) *req, const char *bucket, const char *key, char *b64hmac_out)
- GHashTable * [hreq_query](#) (struct [http_req](#) *req)
- int [hreq_is_query](#) (struct [http_req](#) *req)
- void [hreq_free](#) (struct [http_req](#) *req)
- int [hreq_acl_canned](#) (struct [http_req](#) *req)
- struct [http_uri](#) * [huri_parse](#) (struct [http_uri](#) *uri_dest, char *uri_src_text)
- int [huri_field_unescape](#) (char *s, int s_len)
- char * [huri_field_escape](#) (const char *signed_str, unsigned char mask)
- void [hstor_free](#) (struct [hstor_client](#) *hstor)
- void [hstor_free_blist](#) (struct [hstor_blist](#) *blist)
- void [hstor_free_bucket](#) (struct [hstor_bucket](#) *buck)
- void [hstor_free_object](#) (struct [hstor_object](#) *obj)
- void [hstor_free_keylist](#) (struct [hstor_keylist](#) *keylist)
- struct [hstor_client](#) * [hstor_new](#) (const char *service_acc, const char *service_host, const char *user, const char *secret_key)
- bool [hstor_set_format](#) (struct [hstor_client](#) *hstor, enum [hstor_calling_format](#) f)
- bool [hstor_add_bucket](#) (struct [hstor_client](#) *hstor, const char *name)
- bool [hstor_del_bucket](#) (struct [hstor_client](#) *hstor, const char *name)
- struct [hstor_blist](#) * [hstor_list_buckets](#) (struct [hstor_client](#) *hstor)
- bool [hstor_get](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *key, size_t(*write_cb)(void *, size_t, size_t, void *), void *user_data, bool want_headers)
- void * [hstor_get_inline](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *key, bool want_headers, size_t *len)
- bool [hstor_put](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *key, size_t(*read_cb)(void *, size_t, size_t, void *), uint64_t len, void *user_data, char **user_hdrs)
- bool [hstor_put_inline](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *key, void *data, uint64_t len, char **user_hdrs)
- bool [hstor_del](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *key)
- struct [hstor_keylist](#) * [hstor_keys](#) (struct [hstor_client](#) *hstor, const char *bucket, const char *prefix, const char *marker, const char *delim, unsigned int max_keys)

4.11.1 Define Documentation

4.11.1.1 `#define ARRAY_SIZE(arr) (sizeof(arr) / sizeof((arr)[0]))`

4.11.1.2 `#define PATH_ESCAPE_MASK 0x02`

4.11.1.3 `#define QUERY_ESCAPE_MASK 0x04`

4.11.2 Enumeration Type Documentation

4.11.2.1 anonymous enum

Enumerator:

HREQ_MAX_HDR

4.11.2.2 enum `hstor_calling_format`

Enumerator:

HFMT_ORDINARY

HFMT_SUBDOMAIN

4.11.2.3 enum `ReqACLC`

Enumerator:

ACLC_PRIV

ACLC_PUB_R

ACLC_PUB_RW

ACLC_AUTH_R

ACLCNUM

4.11.2.4 enum `ReqQ`

Enumerator:

URIQ_ACL

URIQ_LOCATION

URIQ_LOGGING

URIQ_TORRENT

URIQNUM

4.11.3 Function Documentation

- 4.11.3.1 `int hreq_acl_canned (struct http_req * req)`
- 4.11.3.2 `void hreq_free (struct http_req * req)`
- 4.11.3.3 `char* hreq_hdr (struct http_req * req, const char * key)`
- 4.11.3.4 `int hreq_hdr_push (struct http_req * req, char * key, char * val)`
- 4.11.3.5 `int hreq_is_query (struct http_req * req)`
- 4.11.3.6 `GHashTable* hreq_query (struct http_req * req)`
- 4.11.3.7 `void hreq_sign (struct http_req * req, const char * bucket, const char * key, char * b64hmac_out)`
- 4.11.3.8 `bool hstor_add_bucket (struct hstor_client * hstor, const char * name)`
- 4.11.3.9 `bool hstor_del (struct hstor_client * hstor, const char * bucket, const char * key)`
- 4.11.3.10 `bool hstor_del_bucket (struct hstor_client * hstor, const char * name)`
- 4.11.3.11 `void hstor_free (struct hstor_client * hstor)`
- 4.11.3.12 `void hstor_free_blist (struct hstor_blist * blist)`
- 4.11.3.13 `void hstor_free_bucket (struct hstor_bucket * buck)`
- 4.11.3.14 `void hstor_free_keylist (struct hstor_keylist * keylist)`
- 4.11.3.15 `void hstor_free_object (struct hstor_object * obj)`
- 4.11.3.16 `bool hstor_get (struct hstor_client * hstor, const char * bucket, const char * key, size_t*(void *, size_t, size_t, void *) write_cb, void * user_data, bool want_headers)`
- 4.11.3.17 `void* hstor_get_inline (struct hstor_client * hstor, const char * bucket, const char * key, bool want_headers, size_t * len)`
- 4.11.3.18 `struct hstor_keylist* hstor_keys (struct hstor_client * hstor, const char * bucket, const char * prefix, const char * marker, const char * delim, unsigned int max_keys)` [read]
- 4.11.3.19 `struct hstor_blist* hstor_list_buckets (struct hstor_client * hstor)` [read]

- 4.11.3.20 `struct hstor_client* hstor_new (const char * service_acc, const char * service_host, const char * user, const char * secret_key)` [read]
- 4.11.3.21 `bool hstor_put (struct hstor_client * hstor, const char * bucket, const char * key, size_t(*) (void *, size_t, size_t, void *) read_cb, uint64_t len, void * user_data, char ** user_hdrs)`
- 4.11.3.22 `bool hstor_put_inline (struct hstor_client * hstor, const char * bucket, const char * key, void * data, uint64_t len, char ** user_hdrs)`
- 4.11.3.23 `bool hstor_set_format (struct hstor_client * hstor, enum hstor_calling_format f)`
- 4.11.3.24 `char* huri_field_escape (const char * signed_str, unsigned char mask)`
- 4.11.3.25 `int huri_field_unescape (char * s, int s_len)`
- 4.11.3.26 `struct http_uri* huri_parse (struct http_uri * uri_dest, char * uri_src_text)` [read]
- 4.11.3.27 `time_t hutil_str2time (const char * timestr)`
- 4.11.3.28 `char* hutil_time2str (char * buf, int len, time_t time)`

4.12 include/ncl.h File Reference

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

Data Structures

- struct [ncl_sess](#)
- struct [ncl_fh](#)
- struct [ncl_read](#)

Functions

- struct [ncl_sess](#) * [ncl_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 [ncl_fh](#) * [ncl_open](#) (struct [ncl_sess](#) **s*, const char **fname*, unsigned int *mode*, int **error*, unsigned int *events*, void(*event)(void *, unsigned int), void **ev_arg*)
- int [ncl_del](#) (struct [ncl_sess](#) **nsess*, const char **fname*)
- struct [ncl_read](#) * [ncl_get](#) (struct [ncl_fh](#) **fh*, int **error*)
- struct [ncl_read](#) * [ncl_get_meta](#) (struct [ncl_fh](#) **fh*, int **error*)

- void `nclد_read_free` (struct `nclد_read` *rp)
- int `nclد_write` (struct `nclد_fh` *, const void *data, long len)
- int `nclد_trylock` (struct `nclد_fh` *)
- int `nclد_qlock` (struct `nclد_fh` *)
- int `nclد_unlock` (struct `nclد_fh` *)
- void `nclد_close` (struct `nclد_fh` *)
- void `nclد_sess_close` (struct `nclد_sess` *s)
- void `nclد_init` (void)

4.12.1 Function Documentation

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

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

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

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

4.12.1.5 void `nclد_init` (void)

4.12.1.6 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]

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

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

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

4.12.1.10 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]

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

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

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

4.13 include/objcache.h File Reference

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

Data Structures

- struct [objcache](#)
- struct [objcache_entry](#)

Defines

- #define [OC_F_DIRTY](#) 0x1
- #define [objcache_get](#)(c, k, l) [__objcache_get](#)(c, k, l, 0)
- #define [objcache_get_dirty](#)(c, k, l) [__objcache_get](#)(c, k, l, [OC_F_DIRTY](#))

Functions

- struct [objcache_entry](#) * [__objcache_get](#) (struct [objcache](#) *cache, const char *key, int klen, unsigned int flag)
- bool [objcache_test_dirty](#) (struct [objcache](#) *cache, struct [objcache_entry](#) *entry)
- void [objcache_put](#) (struct [objcache](#) *cache, struct [objcache_entry](#) *entry)
- int [objcache_count](#) (struct [objcache](#) *cache)
- int [objcache_init](#) (struct [objcache](#) *cache)
- void [objcache_fini](#) (struct [objcache](#) *cache)

4.13.1 Define Documentation

4.13.1.1 #define [objcache_get](#)(c, k, l) [__objcache_get](#)(c, k, l, 0)

4.13.1.2 #define [objcache_get_dirty](#)(c, k, l) [__objcache_get](#)(c, k, l, [OC_F_DIRTY](#))

4.13.1.3 #define [OC_F_DIRTY](#) 0x1

4.13.2 Function Documentation

4.13.2.1 struct [objcache_entry](#)* [__objcache_get](#) (struct [objcache](#) * *cache*, const char * *key*, int *klen*, unsigned int *flag*) [read]

4.13.2.2 int [objcache_count](#) (struct [objcache](#) * *cache*)

4.13.2.3 void [objcache_fini](#) (struct [objcache](#) * *cache*)

4.13.2.4 int [objcache_init](#) (struct [objcache](#) * *cache*)

4.13.2.5 void [objcache_put](#) (struct [objcache](#) * *cache*, struct [objcache_entry](#) * *entry*)

4.13.2.6 bool [objcache_test_dirty](#) (struct [objcache](#) * *cache*, struct [objcache_entry](#) * *entry*)