sftpserver

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Chapter 1

sftpserver

SFTP server based on libssh library using pthreads.
To build you may need to set the following cmake variables:-
CMAKE_INCLUDE_PATH for libssh
CMAKE_LIBRARY_PATH for libssh
CMAKE_C_FLAGS="-DSSH_KEYS_DIR=/etc/ssh/ -DHOME_DIR=/home/user"

Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

handle_table_entry
Handle table entry 7

Chapter 3

File Index

3.1 File List

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

sftpserver.c
SFTP server based on libssh and pthreads 9

Chapter 4

Data Structure Documentation

4.1 handle_table_entry Struct Reference

Handle table entry.

Data Fields

- int type
- void * handle
- void * session_id
- char * path

4.1.1 Detailed Description

Handle table entry.

4.1.2 Field Documentation

4.1.2.1 handle

```
void* handle
```

Handle

4.1.2.2 path

```
char* path
```

Path

4.1.2.3 session_id

```
void* session_id
```

Session ID

4.1.2.4 type

```
int type
```

Handle type

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

- sftpserver.c

Chapter 5

File Documentation

5.1 sftpserver.c File Reference

SFTP server based on libssh and pthreads.

```
#include <sys/types.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <string.h>
#include <pthread.h>
#include <stdio.h>
#include <dirent.h>
#include <semaphore.h>
#include <errno.h>
#include <utime.h>
#include <signal.h>
#include <libssh/libssh.h>
#include <libssh/server.h>
#include <libssh/sftp.h>
```

Data Structures

- struct handle_table_entry

  Handle table entry.

Macros

- #define WITH_SERVER 1
- #define STR(s) XSTR(s)
- #define XSTR(s) #s
- #define SSH_KEYS_DIR /etc/ssh/
- #define HOME_DIR /home/user
- #define BINDPORT "2222"
- #define MAX_HANDLES 20
- #define NUM_ENTRIES_PER_PACKET 50
- #define MAX_LONG_NAME_LEN (NAME_MAX + 100)

Enumerations

- enum { **DIR_HANDLE**, **FILE_HANDLE** }

  Handle type enum.

Functions

- static void init_handle_table (void)

  Initialise handle table.
- static int add_handle (int z_type, void *z_handle, const char *z_path, void *z_session_id)

  Add handle to table.
- static char * get_handle_path (void *z_handle)

  Get handle path from table.
- static int close_handle (void *z_handle)

  Close handle in table.
- static void free_handles (void *z_session_id)

  Free handles in table for given session.
- static int unix_errno_to_ssh_status (int z_errno)

  unix errno to SSH status
- static void clear_filexfer_attrib (struct sftp_attributes_struct *z_attr)

  Clear filexfer attrib.
- static void stat_to_filexfer_attrib (const struct stat *z_st, struct sftp_attributes_struct *z_attr)

  stat to filexfer attrib
- char * readdir_long_name (char *z_file_name, struct stat *z_st, char *z_long_name)

  readdir long name
- static int check_password (const char *z_user, const char *z_password)

  Check password.
- static int authenticate (ssh_session z_session)

  Authenticate session.
- static ssh_channel open_channel (ssh_session z_session)

  Open channel.
- static int sftp_subsystem_request (ssh_session z_session)

  SFTP subsystem request.
- static int process_close (sftp_client_message z_client_message)

  Process close command.
- static int process_fstat (sftp_client_message z_client_message)

  Process fstat command.
- static int process_lstat (sftp_client_message z_client_message)

  Process lstat command.
- static int process_mkdir (sftp_client_message z_client_message)

  Process mkdir command.
- static int process_open (sftp_client_message z_client_message)

  Process open command.
- static int process_opendir (sftp_client_message z_client_message)

  Process opendir command.
- static int process_read (sftp_client_message z_client_message)

  Process read command.
- static int process_readdir (sftp_client_message z_client_message)

  Process readdir command.
- static int process_realpath (sftp_client_message z_client_message)

Process realpath command.

- static int process_remove (sftp_client_message z_client_message)

  Process remove command.
- static int process_rename (sftp_client_message z_client_message)

  Process rename command.
- static int process_rmdir (sftp_client_message z_client_message)

  Process rmdir command.
- static int process_setstat (sftp_client_message z_client_message)

  Process setstat command.
- static int process_stat (sftp_client_message z_client_message)

  Process stat command.
- static int process_write (sftp_client_message z_client_message)

  Process write command.
- static void process_sftp_commands (sftp_session z_sftp_sn)

  Process SFTP commands.
- static void * worker_thread (void *z_session)

  Worker thread.
- void sigterm_handler ()

  sigterm handler
- int main ()

  Main function.

Variables

- static sem_t s_handle_table_mutex

  Handle table semaphore.
- static struct handle_table_entry s_handle_table [MAX_HANDLES]

  Handle table.
- volatile sig_atomic_t run = 1

5.1.1 Detailed Description

SFTP server based on libssh and pthreads.

Author

Steve Pickford

Date

5 Dec 2020 Typo *

See also

https://github.com/sjp27/sftpserver

5.1.2 Macro Definition Documentation

5.1.2.1 BINDPORT

```
#define BINDPORT "2222"
```

Port to bind to

5.1.2.2 HOME_DIR

```
#define HOME_DIR /home/user
```

Home directory

5.1.2.3 MAX_HANDLES

```
#define MAX_HANDLES 20
```

Maximum handles

5.1.2.4 MAX_LONG_NAME_LEN

```
#define MAX_LONG_NAME_LEN (NAME_MAX + 100)
```

Maximum long name length for readdir

5.1.2.5 NUM_ENTRIES_PER_PACKET

```
#define NUM_ENTRIES_PER_PACKET 50
```

Maximum entries per packet for readdir

5.1.2.6 SSH_KEYS_DIR

```
#define SSH_KEYS_DIR /etc/ssh/
```

SSH keys directory

5.1.2.7 STR

```
#define STR(
              s ) XSTR(s)
```

Stringification support

5.1.2.8 WITH_SERVER

```
#define WITH_SERVER 1
```

Compile with SFTP server support

5.1.2.9 XSTR

```
#define XSTR(
             s ) #s
```

Stringification support

5.1.3 Function Documentation

5.1.3.1 add_handle()

```
static int add_handle (
             int z_type,
             void * z_handle,
             const char * z_path,
             void * z_session_id )  [static]
```

Add handle to table.

Parameters

z_type	Handle type
z_handle	Handle
z_path	Path
z_session_id	Session ID

Returns

SSH_OK or SSH_ERROR

5.1.3.2 authenticate()

```
static int authenticate (
             ssh_session z_session )  [static]
```

Authenticate session.

Parameters

z_session	Pointer to ssh session

Returns

SSH_OK or SSH_ERROR

5.1.3.3 check_password()

```
static int check_password (
            const char * z_user,
            const char * z_password )  [static]
```

Check password.

Parameters

z_user	User
z_password	Password

Returns

SSH_OK or SSH_ERROR

5.1.3.4 clear_filexfer_attrib()

```
static void clear_filexfer_attrib (
            struct sftp_attributes_struct * z_attr )  [static]
```

Clear filexfer attrib.

Parameters

z_attr	Pointer to attributes struct

5.1.3.5 close_handle()

```
static int close_handle (
            void * z_handle )  [static]
```

Close handle in table.

Parameters

z_handle	Handle

Returns

SSH_OK or SSH_ERROR

5.1.3.6 free_handles()

```
static void free_handles (
            void * z_session_id )  [static]
```

Free handles in table for given session.

Parameters

z_session_id	Session ID

5.1.3.7 get_handle_path()

```
static char* get_handle_path (
            void * z_handle )  [static]
```

Get handle path from table.

Parameters

z_handle	Handle

Returns

handle path

5.1.3.8 main()

```
int main ( )
```

Main function.

Returns

SSH_OK or SSH_ERROR

5.1.3.9 open_channel()

```
static ssh_channel open_channel (
            ssh_session z_session )  [static]
```

Open channel.

Parameters

z_session	Pointer to ssh session

Returns

ssh channel

5.1.3.10 process_close()

```
static int process_close (
            sftp_client_message z_client_message )  [static]
```

Process close command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.11 process_fstat()

```
static int process_fstat (
            sftp_client_message z_client_message )  [static]
```

Process fstat command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.12 process_lstat()

```
static int process_lstat (
            sftp_client_message z_client_message )  [static]
```

Process lstat command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.13 process_mkdir()

```
static int process_mkdir (
            sftp_client_message z_client_message )  [static]
```

Process mkdir command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.14 process_open()

```
static int process_open (
            sftp_client_message z_client_message )  [static]
```

Process open command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.15 process_opendir()

```
static int process_opendir (
            sftp_client_message z_client_message )  [static]
```

Process opendir command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.16 process_read()

```
static int process_read (
            sftp_client_message z_client_message )  [static]
```

Process read command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.17 process_readdir()

```
static int process_readdir (
            sftp_client_message z_client_message )  [static]
```

Process readdir command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.18 process_realpath()

```
static int process_realpath (
            sftp_client_message z_client_message )  [static]
```

Process realpath command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.19 process_remove()

```
static int process_remove (
            sftp_client_message z_client_message )  [static]
```

Process remove command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.20 process_rename()

```
static int process_rename (
            sftp_client_message z_client_message )  [static]
```

Process rename command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.21 process_rmdir()

```
static int process_rmdir (
            sftp_client_message z_client_message )  [static]
```

Process rmdir command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.22 process_setstat()

```
static int process_setstat (
            sftp_client_message z_client_message )  [static]
```

Process setstat command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.23 process_sftp_commands()

```
static void process_sftp_commands (
            sftp_session z_sftp_sn )  [static]
```

Process SFTP commands.

Parameters

z_sftp_sn	- Pointer to sftp session

5.1.3.24 process_stat()

```
static int process_stat (
            sftp_client_message z_client_message )  [static]
```

Process stat command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.25 process_write()

```
static int process_write (
            sftp_client_message z_client_message )  [static]
```

Process write command.

Parameters

z_client_message	Pointer to client message

Returns

SSH_OK or SSH_ERROR

5.1.3.26 readdir_long_name()

```
char* readdir_long_name (
            char * z_file_name,
            struct stat * z_st,
            char * z_long_name )
```

readdir long name

Parameters

z_file_name	Pointer to file_name
z_st	Pointer to stat structure
z_long_name	Pointer to long_name

Returns

Pointer to long_name

5.1.3.27 sftp_subsystem_request()

```
static int sftp_subsystem_request (
            ssh_session z_session )  [static]
```

SFTP subsystem request.

Parameters

z_session	Pointer to ssh session

Returns

SSH_OK or SSH_ERROR

5.1.3.28 stat_to_filexfer_attrib()

```
static void stat_to_filexfer_attrib (
            const struct stat * z_st,
            struct sftp_attributes_struct * z_attr )  [static]
```

stat to filexfer attrib

Parameters

z_st	Pointer to stat struct
z_attr	Pointer to attributes struct

5.1.3.29 unix_errno_to_ssh_status()

```
static int unix_errno_to_ssh_status (
            int z_errno )  [static]
```

unix errno to SSH status

Parameters

z_errno	Error number

Returns

SSH status

5.1.3.30 worker_thread()

```
static void* worker_thread (
             void * z_session )  [static]
```

Worker thread.

Parameters

z_session	- Pointer to ssh session

Returns

NULL

5.1.4 Variable Documentation

5.1.4.1 run

```
volatile sig_atomic_t run = 1
```

Run flag

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