

TCP_SERVER

1.0

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Chapter 1

Data Structure Documentation

1.1 s_process_data Struct Reference

```
#include <tcp_server.h>
```

Data Fields

- `PLI_INT32` [num_ab_val_pairs](#)
- `PLI_INT32` [array_byte_size](#)
- `struct s_ringBuffer *` [p_ringbuffer](#)
- `pthread_t` [thread](#)
- `vpiHandle` [systf_handle](#)
- `vpiHandle` [arg1_handle](#)
- `vpiHandle` [arg2_handle](#)

1.1.1 Field Documentation

1.1.1.1 arg1_handle

```
vpiHandle s_process_data::arg1_handle
```

1.1.1.2 arg2_handle

```
vpiHandle s_process_data::arg2_handle
```

1.1.1.3 array_byte_size

```
PLI_INT32 s_process_data::array_byte_size
```

1.1.1.4 num_ab_val_pairs

```
PLI_INT32 s_process_data::num_ab_val_pairs
```

1.1.1.5 p_ringbuffer

```
struct s_ringBuffer* s_process_data::p_ringbuffer
```

1.1.1.6 systf_handle

```
vpiHandle s_process_data::systf_handle
```

1.1.1.7 thread

```
pthread_t s_process_data::thread
```

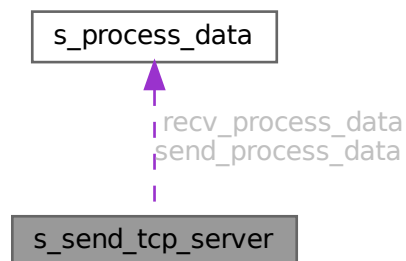
The documentation for this struct was generated from the following file:

- [tcp_server.h](#)

1.2 s_send_tcp_server Struct Reference

```
#include <tcp_server.h>
```

Collaboration diagram for s_send_tcp_server:



Data Fields

- int [kill_thread](#)
- struct pollfd [poll_connection](#)
- struct sockaddr_in * [p_socket_info](#)
- pthread_t [connection_thread](#)
- char * [p_address](#)
- unsigned short [port](#)
- vpiHandle [systf_handle](#)
- struct [s_process_data](#) [recv_process_data](#)
- struct [s_process_data](#) [send_process_data](#)

1.2.1 Field Documentation

1.2.1.1 connection_thread

pthread_t s_send_tcp_server::connection_thread

1.2.1.2 kill_thread

int s_send_tcp_server::kill_thread

1.2.1.3 p_address

char* s_send_tcp_server::p_address

1.2.1.4 p_socket_info

struct sockaddr_in* s_send_tcp_server::p_socket_info

1.2.1.5 poll_connection

struct pollfd s_send_tcp_server::poll_connection

1.2.1.6 port

unsigned short s_send_tcp_server::port

1.2.1.7 recv_process_data

struct [s_process_data](#) s_send_tcp_server::recv_process_data

1.2.1.8 send_process_data

struct [s_process_data](#) s_send_tcp_server::send_process_data

1.2.1.9 systf_handle

vpiHandle s_send_tcp_server::systf_handle

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

- [tcp_server.h](#)

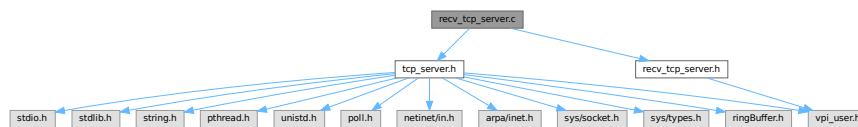
Chapter 2

File Documentation

2.1 recv_tcp_server.c File Reference

Functions for TCP server data receive.

```
#include "tcp_server.h"
#include "recv_tcp_server.h"
Include dependency graph for recv_tcp_server.c:
```



Functions

- void * [recv_thread](#) (void *data)
RECV TCP SETUP THREAD TO FILL RINGBUFFER.
- PLI_INT32 [recv_tcp_server_end_sim_cb](#) (p_cb_data data)
RECEIVE TCP SERVER DATA END SIM CALLBACK.
- PLI_INT32 [recv_tcp_server_start_sim_cb](#) (p_cb_data data)
RECEIVE TCP SERVER DATA START SIM CALLBACK.
- PLI_INT32 [recv_tcp_server_compiletf](#) (PLI_BYTE8 *user_data)
Compile time call, check the arguments for validity.
- PLI_INT32 [recv_tcp_server_calltf](#) (PLI_BYTE8 *user_data)
recv_tcp_server_calltf is a callback for the recv_tcp_server function.

2.1.1 Detailed Description

Functions for TCP server data receive.

Author

Jay Convertino(johnathan.convertino.1@us.af.mil)

Date

2024-02-22

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2.1.2 Function Documentation

2.1.2.1 `recv_tcp_server_calltf()`

```
PLI_INT32 recv_tcp_server_calltf (
    PLI_BYTE8 * user_data )
```

`recv_tcp_server_calltf` is a callback for the `recv_tcp_server` function.

`read_binary_calltf` is a callback for the `recv_tcp_server` function.

2.1.2.2 `recv_tcp_server_compiletf()`

```
PLI_INT32 recv_tcp_server_compiletf (
    PLI_BYTE8 * user_data )
```

Compile time call, check the arguments for validity.

RECEIVE TCP SERVER DATA COMPILE SETUP.

2.1.2.3 recv_tcp_server_end_sim_cb()

```
PLI_INT32 recv_tcp_server_end_sim_cb (  
    p_cb_data data )
```

RECEIVE TCP SERVER DATA END SIM CALLBACK.

2.1.2.4 recv_tcp_server_start_sim_cb()

```
PLI_INT32 recv_tcp_server_start_sim_cb (  
    p_cb_data data )
```

RECEIVE TCP SERVER DATA START SIM CALLBACK.

2.1.2.5 recv_thread()

```
void * recv_thread (  
    void * data )
```

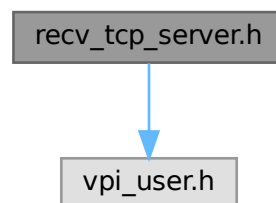
RECV TCP SETUP THREAD TO FILL RINGBUFFER.

2.2 recv_tcp_server.h File Reference

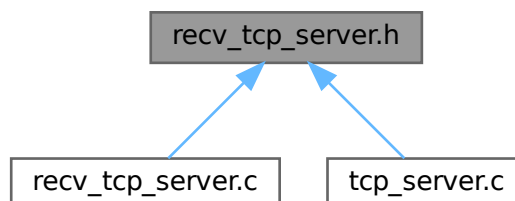
Functions for TCP server data receive.

```
#include <vpi_user.h>
```

Include dependency graph for recv_tcp_server.h:



This graph shows which files directly or indirectly include this file:



Functions

- `PLI_INT32 recv_tcp_server_compiletf (PLI_BYTE8 *user_data)`
RECEIVE TCP SERVER DATA COMPILE SETUP.
- `PLI_INT32 recv_tcp_server_calltf (PLI_BYTE8 *user_data)`
read_binary_calltf is a callback for the recv_tcp_server function.

2.2.1 Detailed Description

Functions for TCP server data receive.

Author

Jay Convertino(johnathan.convertino.1@us.af.mil)

Date

2024-02-22

\$recv_tcp_server takes 2 arguments. First the fd returned from \$setup_tcp_server, and then a register for data in size bytes. The function returns the number of bytes read.

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2.2.2 Function Documentation

2.2.2.1 recv_tcp_server_calltf()

```
PLI_INT32 recv_tcp_server_calltf (
    PLI_BYTE8 * user_data )
```

read_binary_calltf is a callback for the recv_tcp_server function.

read_binary_calltf is a callback for the recv_tcp_server function.

2.2.2.2 recv_tcp_server_compiletf()

```
PLI_INT32 recv_tcp_server_compiletf (
    PLI_BYTE8 * user_data )
```

RECEIVE TCP SERVER DATA COMPILE SETUP.

RECEIVE TCP SERVER DATA COMPILE SETUP.

2.3 recv_tcp_server.h

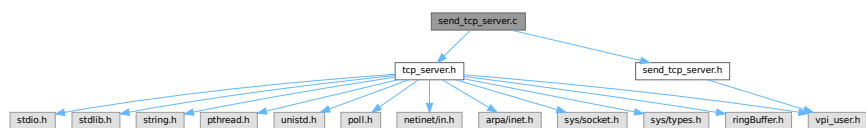
[Go to the documentation of this file.](#)

```
00001 //*****
00030 //*****
00031
00032 #ifndef __RECV_TCP_SERVER
00033 #define __RECV_TCP_SERVER
00034
00035 // Include the VPI library of routines (object based).
00036 #include <vpi_user.h>
00037
00038 //*****
00040 //*****
00041 PLI_INT32 recv_tcp_server_compiletf (PLI_BYTE8 *user_data);
00042
00043 //*****
00045 //*****
00046 PLI_INT32 recv_tcp_server_calltf (PLI_BYTE8 *user_data);
00047
00048 #endif
```

2.4 send_tcp_server.c File Reference

Functions for TCP server data send.

```
#include "tcp_server.h"
#include "send_tcp_server.h"
Include dependency graph for send_tcp_server.c:
```



Functions

- void * [send_thread](#) (void *data)
SEND TCP SERVER THREAD TO EMPTY RINGBUFFER.
- PLI_INT32 [send_tcp_server_end_sim_cb](#) (p_cb_data data)
SEND TCP SERVER DATA END SIM CALLBACK.
- PLI_INT32 [send_tcp_server_start_sim_cb](#) (p_cb_data data)
SEND TCP SERVER DATA START SIM CALLBACK.
- PLI_INT32 [send_tcp_server_compiletf](#) (PLI_BYTE8 *user_data)
Compile time call, check the arguments for validity.
- PLI_INT32 [send_tcp_server_calltf](#) (PLI_BYTE8 *user_data)
Called by the simulator, each time it is requested.

2.4.1 Detailed Description

Functions for TCP server data send.

Author

Jay Convertino(johnathan.convertino.1@us.af.mil)

Date

2024-23-02

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2.4.2 Function Documentation

2.4.2.1 send_tcp_server_calltf()

```
PLI_INT32 send_tcp_server_calltf (
    PLI_BYTE8 * user_data )
```

Called by the simulator, each time it is requested.

2.4.2.2 send_tcp_server_compiletf()

```
PLI_INT32 send_tcp_server_compiletf (
    PLI_BYTE8 * user_data )
```

Compile time call, check the arguments for validity.

SEND TCP SERVER DATA COMPILE SETUP.

2.4.2.3 send_tcp_server_end_sim_cb()

```
PLI_INT32 send_tcp_server_end_sim_cb (
    p_cb_data data )
```

SEND TCP SERVER DATA END SIM CALLBACK.

2.4.2.4 send_tcp_server_start_sim_cb()

```
PLI_INT32 send_tcp_server_start_sim_cb (
    p_cb_data data )
```

SEND TCP SERVER DATA START SIM CALLBACK.

2.4.2.5 send_thread()

```
void * send_thread (
    void * data )
```

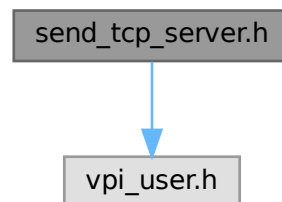
SEND TCP SERVER THREAD TO EMPTY RINGBUFFER.

2.5 send_tcp_server.h File Reference

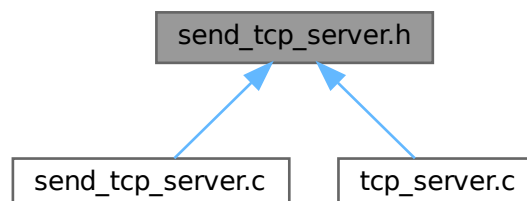
Function to send data over a tcp server.

```
#include <vpi_user.h>
```

Include dependency graph for send_tcp_server.h:



This graph shows which files directly or indirectly include this file:



Functions

- `PLI_INT32 send_tcp_server_compiletf (PLI_BYTE8 *user_data)`
SEND TCP SERVER DATA COMPILE SETUP.
- `PLI_INT32 send_tcp_server_calltf (PLI_BYTE8 *user_data)`
Called by the simulator, each time it is requested.

2.5.1 Detailed Description

Function to send data over a tcp server.

Author

Jay Convertino(johnathan.convertino.1@us.af.mil)

Date

2024-24-2

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2.5.2 Function Documentation

2.5.2.1 send_tcp_server_calltf()

```
PLI_INT32 send_tcp_server_calltf (
    PLI_BYTE8 * user_data )
```

Called by the simulator, each time it is requested.

2.5.2.2 send_tcp_server_compiletf()

```
PLI_INT32 send_tcp_server_compiletf (
    PLI_BYTE8 * user_data )
```

SEND TCP SERVER DATA COMPILE SETUP.

SEND TCP SERVER DATA COMPILE SETUP.

2.6 send_tcp_server.h

[Go to the documentation of this file.](#)

```

00001 //*****
00027 //*****
00028
00029 #ifndef __SEND_TCP_SERVER
00030 #define __SEND_TCP_SERVER
00031
00032 // Include the VPI library of routines (object based).
00033 #include <vpi_user.h>
00034
00035 //*****
00037 //*****
00038 PLI_INT32 send_tcp_server_compiletf (PLI_BYTE8 *user_data);
00039
00040 //*****
00042 //*****
00043 PLI_INT32 send_tcp_server_calltf (PLI_BYTE8 *user_data);
00044
00045 #endif

```

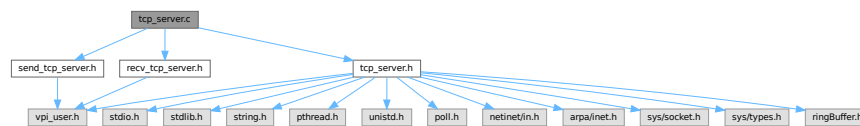
2.7 tcp_server.c File Reference

```

#include "send_tcp_server.h"
#include "recv_tcp_server.h"
#include "tcp_server.h"

```

Include dependency graph for tcp_server.c:



Functions

- void * [connection_keep_alive](#) (void *p_data)
- PLI_INT32 [setup_tcp_server_start_sim_cb](#) (p_cb_data data)
SETUP TCP SERVER DATA START SIM CALLBACK.
- PLI_INT32 [setup_tcp_server_end_sim_cb](#) (p_cb_data data)
SETUP TCP SERVER END SIM CALLBACK.
- PLI_INT32 [tcp_server_sizetf](#) (PLI_BYTE8 *user_data)
Returns the size, in bits, of the function return type.
- PLI_INT32 [setup_tcp_server_compiletf](#) (PLI_BYTE8 *user_data)
Compile time call, check the arguments for validity.
- PLI_INT32 [setup_tcp_server_calltf](#) (PLI_BYTE8 *user_data)
setup_tcp_server_calltf is the callback for the setup_tcp_server function.
- void [recv_tcp_server_reg_systf](#) (void)
Setup recv_tcp_server function.
- void [send_tcp_server_reg_systf](#) (void)
Setup send_tcp_server function.
- void [setup_tcp_server_reg_systf](#) (void)
Setup setup_tcp_server function.

Variables

- unsigned int `g_num_of_connections` = 0
- struct `s_send_tcp_server` `g_send_tcp_server` [MAX_CONNECTIONS]
- void(* `vlog_startup_routines` [])(void)
register the new file functions

2.7.1 Function Documentation

2.7.1.1 connection_keep_alive()

```
void * connection_keep_alive (
    void * p_data )
```

2.7.1.2 recv_tcp_server_reg_systf()

```
void recv_tcp_server_reg_systf (
    void )
```

Setup `recv_tcp_server` function.

2.7.1.3 send_tcp_server_reg_systf()

```
void send_tcp_server_reg_systf (
    void )
```

Setup `send_tcp_server` function.

2.7.1.4 setup_tcp_server_calltf()

```
PLI_INT32 setup_tcp_server_calltf (
    PLI_BYTE8 * user_data )
```

`setup_tcp_server_calltf` is the callback for the `setup_tcp_server` function.

2.7.1.5 setup_tcp_server_compiletf()

```
PLI_INT32 setup_tcp_server_compiletf (
    PLI_BYTE8 * user_data )
```

Compile time call, check the arguments for validity.

2.7.1.6 setup_tcp_server_end_sim_cb()

```
PLI_INT32 setup_tcp_server_end_sim_cb (
    p_cb_data data )
```

SETUP TCP SERVER END SIM CALLBACK.

2.7.1.7 setup_tcp_server_reg_systf()

```
void setup_tcp_server_reg_systf (
    void )
```

Setup setup_tcp_server function.

2.7.1.8 setup_tcp_server_start_sim_cb()

```
PLI_INT32 setup_tcp_server_start_sim_cb (
    p_cb_data data )
```

SETUP TCP SERVER DATA START SIM CALLBACK.

2.7.1.9 tcp_server_sizetf()

```
PLI_INT32 tcp_server_sizetf (
    PLI_BYTE8 * user_data )
```

Returns the size, in bits, of the function return type.

2.7.2 Variable Documentation

2.7.2.1 g_num_of_connections

```
unsigned int g_num_of_connections = 0
```

2.7.2.2 g_send_tcp_server

```
struct s_send_tcp_server g_send_tcp_server[MAX_CONNECTIONS]
```

2.7.2.3 vlog_startup_routines

```
void(* vlog_startup_routines[]) (void) (
    void )
```

Initial value:

```
= {
    recv_tcp_server_reg_systf,
    send_tcp_server_reg_systf,
    setup_tcp_server_reg_systf,
    0
}
```

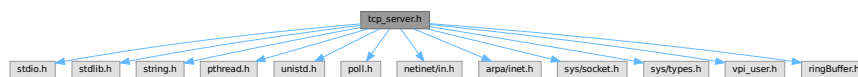
register the new file functions

2.8 tcp_server.h File Reference

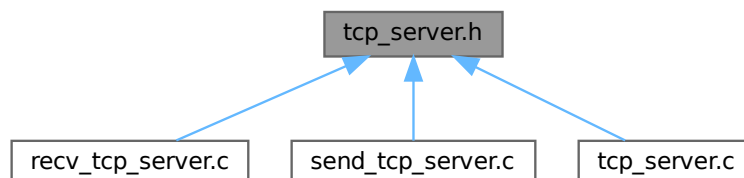
Functions to write raw binary files properly in verilog.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pthread.h>
#include <unistd.h>
#include <poll.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <sys/socket.h>
#include <sys/types.h>
#include <vpi_user.h>
#include "ringBuffer.h"
```

Include dependency graph for tcp_server.h:



This graph shows which files directly or indirectly include this file:



Data Structures

- struct [s_process_data](#)
- struct [s_send_tcp_server](#)

Macros

- #define [BUFFSIZE](#) (1 << 23)
- #define [DATAHUNK](#) (1 << 21)
- #define [MAX_CONNECTIONS](#) 256
- #define [RECV_NAME](#) "\$recv_tcp_server"
- #define [SEND_NAME](#) "\$send_tcp_server"
- #define [SETUP_NAME](#) "\$setup_tcp_server"

Variables

- struct `s_send_tcp_server` `g_send_tcp_server` [`MAX_CONNECTIONS`]

2.8.1 Detailed Description

Functions to write raw binary files properly in verilog.

Functions to create multiple TCP servers.

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2.8.2 Macro Definition Documentation

2.8.2.1 BUFSIZE

```
#define BUFSIZE (1 << 23)
```

2.8.2.2 DATACHUNK

```
#define DATACHUNK (1 << 21)
```

2.8.2.3 MAX_CONNECTIONS

```
#define MAX_CONNECTIONS 256
```

2.8.2.4 RECV_NAME

```
#define RECV_NAME "$recv_tcp_server"
```

2.8.2.5 SEND_NAME

```
#define SEND_NAME "$send_tcp_server"
```

2.8.2.6 SETUP_NAME

```
#define SETUP_NAME "$setup_tcp_server"
```

2.8.3 Variable Documentation

2.8.3.1 g_send_tcp_server

```
struct s_send_tcp_server g_send_tcp_server[MAX_CONNECTIONS] [extern]
```

2.9 tcp_server.h

[Go to the documentation of this file.](#)

```

00001 //*****
00027 //*****
00028
00029 #ifndef __VPI_TCP_SERVER
00030 #define __VPI_TCP_SERVER
00031
00032 // c standard libraries
00033 #include <stdio.h>
00034 #include <stdlib.h>
00035 #include <string.h>
00036 // other libs
00037 // threads
00038 #include <pthread.h>
00039 // tcp
00040 #include <unistd.h>
00041 #include <poll.h>
00042 #include <netinet/in.h>
00043 #include <arpa/inet.h>
00044 #include <sys/socket.h>
00045 #include <sys/types.h>
00046 // Include the VPI library of routines (object based).
00047 #include <vpi_user.h>
00048 // include ringbuffer library
00049 #include "ringBuffer.h"
00050
00051 //ring buffer sizes
00052 // 4 MB
00053 #define BUFFSIZE (1 « 23)
00054 // 1 MB
00055 #define DATAHUNK (1 « 21)
00056
00057 #define MAX_CONNECTIONS 256
00058
00059 #define RECV_NAME "$recv_tcp_server"
00060 #define SEND_NAME "$send_tcp_server"
00061 #define SETUP_NAME "$setup_tcp_server"
00062
00063 struct s_process_data
00064 {
00065     // PLI_INT32 error;
00066     PLI_INT32 num_ab_val_pairs;
00067     PLI_INT32 array_byte_size;
00068
00069     struct s_ringBuffer *p_ringbuffer;
00070
00071     pthread_t thread;
00072
00073     vpiHandle systf_handle;
00074     vpiHandle arg1_handle;
00075     vpiHandle arg2_handle;
00076 };
00077
00078 struct s_send_tcp_server
00079 {
00080     int kill_thread;
00081
00082     struct pollfd poll_connection;
00083     struct sockaddr_in *p_socket_info;
00084
00085     pthread_t connection_thread;
00086
00087     char *p_address;
00088     unsigned short port;
00089
00090     vpiHandle systf_handle;
00091
00092     struct s_process_data recv_process_data;
00093     struct s_process_data send_process_data;
00094 };
00095
00096 extern struct s_send_tcp_server g_send_tcp_server[MAX_CONNECTIONS];
00097
00098 #endif

```


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