

# 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

- struct s\_ringBuffer \* [p\\_ringbuffer](#)
- pthread\_t [thread](#)
- void \* [p\\_data](#)

#### 1.1.1 Field Documentation

##### 1.1.1.1 p\_data

```
void* s_process_data::p_data
```

##### 1.1.1.2 p\_ringbuffer

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

##### 1.1.1.3 thread

```
pthread_t s_process_data::thread
```

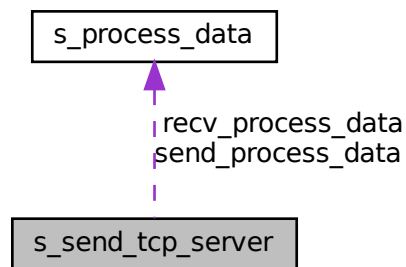
The documentation for this struct was generated from the following file:

- [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](#)
- 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
```

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

- [tcp\\_server.h](#)

## 1.3 s\_vpi\_data Struct Reference

```
#include <vpi_tcp_server.h>
```

## Data Fields

- `PLI_INT32` [error](#)
- `PLI_INT32` [num\\_ab\\_val\\_pairs](#)
- `PLI_INT32` [array\\_byte\\_size](#)
- `vpiHandle` [systf\\_handle](#)
- `vpiHandle` [arg1\\_handle](#)
- `vpiHandle` [arg2\\_handle](#)

### 1.3.1 Field Documentation

#### 1.3.1.1 `arg1_handle`

`vpiHandle s_vpi_data::arg1_handle`

#### 1.3.1.2 `arg2_handle`

`vpiHandle s_vpi_data::arg2_handle`

#### 1.3.1.3 `array_byte_size`

`PLI_INT32 s_vpi_data::array_byte_size`

#### 1.3.1.4 `error`

`PLI_INT32 s_vpi_data::error`

#### 1.3.1.5 `num_ab_val_pairs`

`PLI_INT32 s_vpi_data::num_ab_val_pairs`

#### 1.3.1.6 `systf_handle`

`vpiHandle s_vpi_data::systf_handle`

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

- [vpi\\_tcp\\_server.h](#)

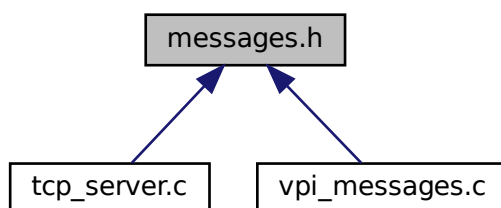
## Chapter 2

# File Documentation

### 2.1 messages.h File Reference

Functions to create multiple TCP servers.

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



### Functions

- int [print\\_error](#) (const char \*format,...)
- int [print\\_info](#) (const char \*format,...)

#### 2.1.1 Detailed Description

Functions to create multiple TCP servers.

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**Date**

2024-03-02

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**2.1.2 Function Documentation****2.1.2.1 print\_error()**

```
int print_error (
    const char * format,
    ... )
```

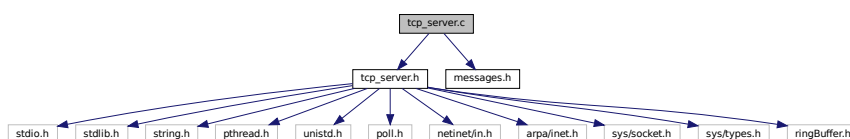
**2.1.2.2 print\_info()**

```
int print_info (
    const char * format,
    ... )
```

**2.2 tcp\_server.c File Reference**

```
#include "tcp_server.h"
#include "messages.h"
```

Include dependency graph for tcp\_server.c:



## Functions

- int \* [setup\\_tcp\\_server](#) (char \*p\_address, int port)  
*SETUP TCP SERVER.*
- int [start\\_tcp\\_server](#) (int \*p\_index)  
*START TCP SERVER.*
- int [end\\_tcp\\_server](#) (int \*p\_index)  
*END TCP SERVER.*
- void \* [connection\\_keep\\_alive](#) (void \*p\_data)

## Variables

- unsigned int [g\\_num\\_of\\_connections](#) = 0
- struct [s\\_send\\_tcp\\_server](#) [g\\_send\\_tcp\\_server](#) [[MAX\\_CONNECTIONS](#)]

### 2.2.1 Function Documentation

#### 2.2.1.1 [connection\\_keep\\_alive\(\)](#)

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

#### 2.2.1.2 [end\\_tcp\\_server\(\)](#)

```
int end_tcp_server (  
    int * p_index )
```

END TCP SERVER.

#### 2.2.1.3 [setup\\_tcp\\_server\(\)](#)

```
int * setup_tcp_server (  
    char * p_address,  
    int port )
```

SETUP TCP SERVER.

### 2.2.1.4 start\_tcp\_server()

```
int start_tcp_server (
    int * p_index )
```

START TCP SERVER.

## 2.2.2 Variable Documentation

### 2.2.2.1 g\_num\_of\_connections

```
unsigned int g_num_of_connections = 0
```

### 2.2.2.2 g\_send\_tcp\_server

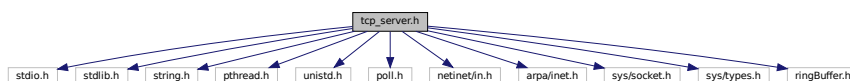
```
struct s_send_tcp_server g_send_tcp_server[MAX_CONNECTIONS]
```

## 2.3 tcp\_server.h File Reference

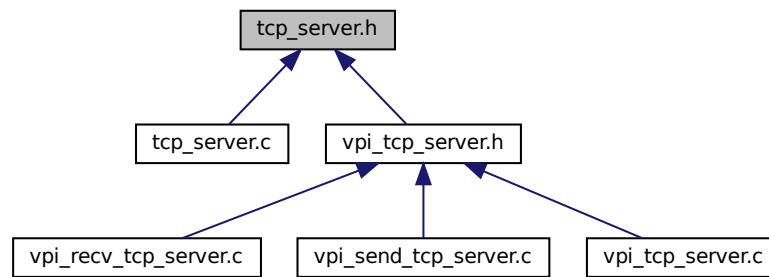
Functions to write raw binary files properly in verilog.

```
#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 "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

## Functions

- int \* [setup\\_tcp\\_server](#) (char \*p\_address, int port)  
*SETUP TCP SERVER.*
- int [start\\_tcp\\_server](#) (int \*p\_index)  
*START TCP SERVER.*
- int [end\\_tcp\\_server](#) (int \*p\_index)  
*END TCP SERVER.*

## Variables

- struct [s\\_send\\_tcp\\_server](#) [g\\_send\\_tcp\\_server](#) [[MAX\\_CONNECTIONS](#)]

### 2.3.1 Detailed Description

Functions to write raw binary files properly in verilog.

Functions to create multiple TCP servers.

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#### Date

2024-22-02

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#### Date

2024-23-02

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## 2.3.2 Macro Definition Documentation

### 2.3.2.1 BUFSIZE

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

### 2.3.2.2 DATACHUNK

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

### 2.3.2.3 MAX\_CONNECTIONS

```
#define MAX_CONNECTIONS 256
```

## 2.3.3 Function Documentation

### 2.3.3.1 end\_tcp\_server()

```
int end_tcp_server (  
    int * p_index )
```

END TCP SERVER.

### 2.3.3.2 setup\_tcp\_server()

```
int* setup_tcp_server (  
    char * p_address,  
    int port )
```

SETUP TCP SERVER.

### 2.3.3.3 start\_tcp\_server()

```
int start_tcp_server (
    int * p_index )
```

START TCP SERVER.

## 2.3.4 Variable Documentation

### 2.3.4.1 g\_send\_tcp\_server

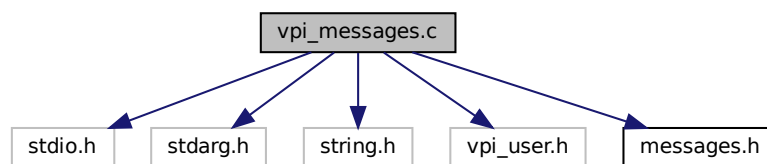
```
struct s_send_tcp_server g_send_tcp_server[MAX_CONNECTIONS] [extern]
```

## 2.4 vpi\_messages.c File Reference

Functions print messages using the vpi interface.

```
#include <stdio.h>
#include <stdarg.h>
#include <string.h>
#include <vpi_user.h>
#include "messages.h"
```

Include dependency graph for vpi\_messages.c:



## Functions

- int [print\\_error](#) (const char \*format,...)
- int [print\\_info](#) (const char \*format,...)

## 2.4.1 Detailed Description

Functions print messages using the vpi interface.

### Author

Jay Convertino( [johnathan.convertino.1@us.af.mil](mailto:johnathan.convertino.1@us.af.mil))

### Date

2024-03-02

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## 2.4.2 Function Documentation

### 2.4.2.1 print\_error()

```
int print_error (
    const char * format,
    ... )
```

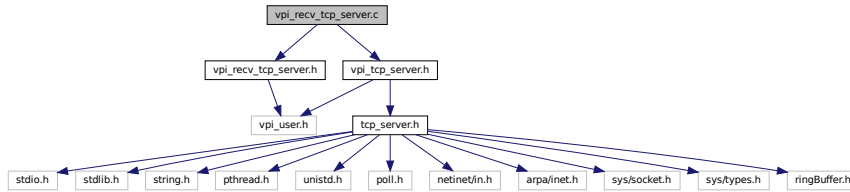
### 2.4.2.2 print\_info()

```
int print_info (
    const char * format,
    ... )
```

## 2.5 vpi\_recv\_tcp\_server.c File Reference

Functions for TCP server data receive.

```
#include "vpi_tcp_server.h"
#include "vpi_recv_tcp_server.h"
Include dependency graph for vpi_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.*

### 2.5.1 Detailed Description

Functions for TCP server data receive.

Author

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Date

2024-02-22

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## 2.5.2 Function Documentation

### 2.5.2.1 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.

### 2.5.2.2 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.

### 2.5.2.3 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.

### 2.5.2.4 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.

### 2.5.2.5 recv\_thread()

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

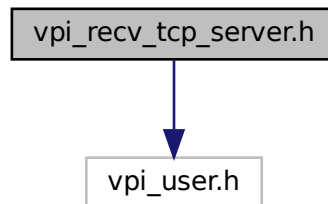
RECV TCP SETUP THREAD TO FILL RINGBUFFER.

## 2.6 vpi\_recv\_tcp\_server.h File Reference

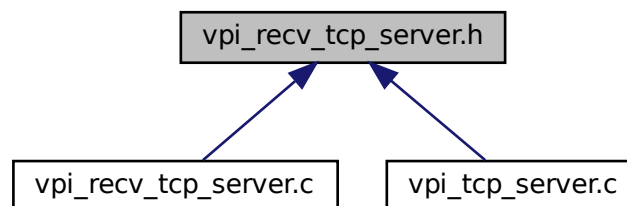
Functions for TCP server data receive.

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

Include dependency graph for vpi\_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)`  
*recv\_tcp\_server\_calltf is a callback for the recv\_tcp\_server function.*

### 2.6.1 Detailed Description

Functions for TCP server data receive.

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**Date**

2024-02-22

\$recv\_tcp\_server takes 2 arguments. First a port matching setup\_tcp\_server, and second a vector of bytes for placing data.

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## 2.6.2 Function Documentation

### 2.6.2.1 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.

### 2.6.2.2 recv\_tcp\_server\_compiletf()

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

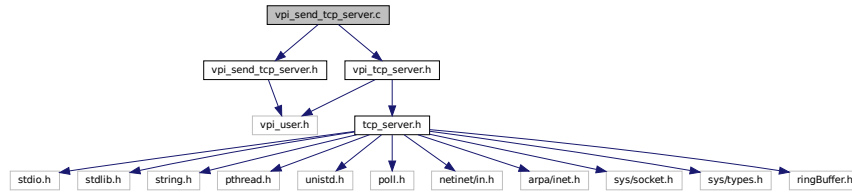
RECEIVE TCP SERVER DATA COMPILE SETUP.

RECEIVE TCP SERVER DATA COMPILE SETUP.

## 2.7 vpi\_send\_tcp\_server.c File Reference

Functions for TCP server data send.

```
#include "vpi_tcp_server.h"
#include "vpi_send_tcp_server.h"
Include dependency graph for vpi_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.*

### 2.7.1 Detailed Description

Functions for TCP server data send.

Author

Jay Convertino( [johnathan.convertino.1@us.af.mil](mailto:johnathan.convertino.1@us.af.mil))

Date

2024-23-02

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## 2.7.2 Function Documentation

### 2.7.2.1 send\_tcp\_server\_calltf()

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

Called by the simulator, each time it is requested.

### 2.7.2.2 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.

### 2.7.2.3 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.

### 2.7.2.4 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.

### 2.7.2.5 send\_thread()

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

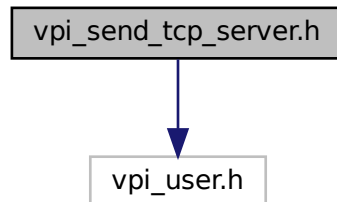
SEND TCP SERVER THREAD TO EMPTY RINGBUFFER.

## 2.8 vpi\_send\_tcp\_server.h File Reference

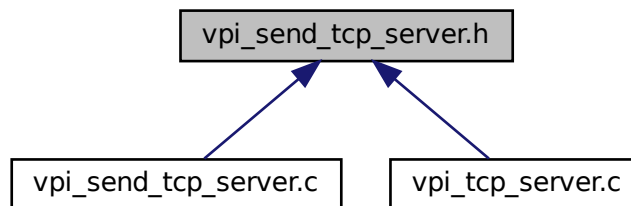
Function to send data over a tcp server.

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

Include dependency graph for vpi\_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.*

### 2.8.1 Detailed Description

Function to send data over a tcp server.

Author

Jay Convertino( [johnathan.convertino.1@us.af.mil](mailto:johnathan.convertino.1@us.af.mil))

## Date

2024-24-2

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## 2.8.2 Function Documentation

### 2.8.2.1 send\_tcp\_server\_calltf()

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

Called by the simulator, each time it is requested.

### 2.8.2.2 send\_tcp\_server\_compiletf()

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

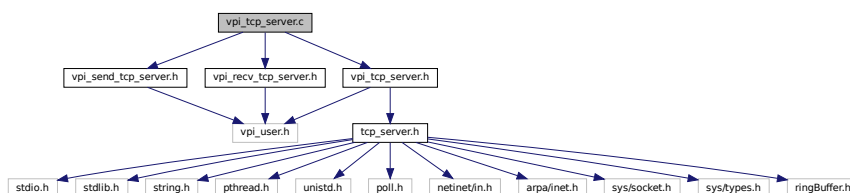
SEND TCP SERVER DATA COMPILE SETUP.

SEND TCP SERVER DATA COMPILE SETUP.

## 2.9 vpi\_tcp\_server.c File Reference

```
#include "vpi_send_tcp_server.h"
#include "vpi_recv_tcp_server.h"
#include "vpi_tcp_server.h"
```

Include dependency graph for vpi\_tcp\_server.c:



## Functions

- 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

- void(\* [vlog\\_startup\\_routines](#) [ ])(void)  
*register the new file functions*

## 2.9.1 Function Documentation

### 2.9.1.1 [recv\\_tcp\\_server\\_reg\\_systf\(\)](#)

```
void recv_tcp_server_reg_systf (
    void )
```

Setup recv\_tcp\_server function.

### 2.9.1.2 [send\\_tcp\\_server\\_reg\\_systf\(\)](#)

```
void send_tcp_server_reg_systf (
    void )
```

Setup send\_tcp\_server function.

### 2.9.1.3 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.

### 2.9.1.4 setup\_tcp\_server\_compiletf()

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

Compile time call, check the arguments for validity.

### 2.9.1.5 setup\_tcp\_server\_end\_sim\_cb()

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

SETUP TCP SERVER END SIM CALLBACK.

### 2.9.1.6 setup\_tcp\_server\_reg\_systf()

```
void setup_tcp_server_reg_systf (
    void )
```

Setup setup\_tcp\_server function.

### 2.9.1.7 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.

### 2.9.1.8 tcp\_server\_sizetf()

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

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

## 2.9.2 Variable Documentation

### 2.9.2.1 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
}
```

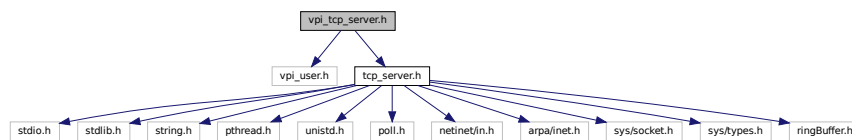
register the new file functions

## 2.10 vpi\_tcp\_server.h File Reference

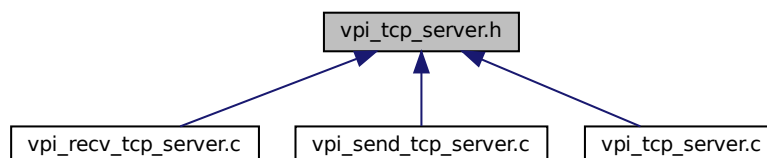
Functions to write raw binary files properly in verilog.

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

Include dependency graph for vpi\_tcp\_server.h:



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



## Data Structures

- struct [s\\_vpi\\_data](#)

## Macros

- #define `RECV_NAME` "\$recv\_tcp\_server"
- #define `SEND_NAME` "\$send\_tcp\_server"
- #define `SETUP_NAME` "\$setup\_tcp\_server"

### 2.10.1 Detailed Description

Functions to write raw binary files properly in verilog.

Functions to create multiple TCP servers.

#### Author

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

#### Date

2024-22-02

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#### Author

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

#### Date

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## 2.10.2 Macro Definition Documentation

### 2.10.2.1 RECV\_NAME

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

### 2.10.2.2 SEND\_NAME

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

### 2.10.2.3 SETUP\_NAME

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



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