

UDP

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# Chapter 1

## udp





## Chapter 2

# Topic Index

### 2.1 Topics

Here is a list of all topics with brief descriptions:

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## Chapter 3

# Directory Hierarchy

### 3.1 Directories

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## Chapter 4

# Class Index

### 4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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# Chapter 5

## File Index

### 5.1 File List

Here is a list of all files with brief descriptions:

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Header file for work udp package . . . . .	40





# Chapter 6

## Topic Documentation

### 6.1 work for udp

Group function for work udp package.

#### Classes

- struct [udp\\_head](#)  
*Struct is header UDP pack.*
- struct [udp\\_pack](#)  
*Struct is UDP package.*
- struct [pseudo\\_header](#)  
*Struct [pseudo\\_header](#) for calculate checksum for UDP package.*

#### Typedefs

- typedef struct [udp\\_pack](#) \* [udp\\_pack\\_t](#)  
*UDP packet descriptor.*

#### Functions

- static uint16\_t [inet\\_port](#) (const char \*const port)  
*Function support for parsing port.*
- static void [set\\_size\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const uint16\_t size)  
*Function raw write size UDP package.*
- static uint32\_t [sum\\_compute](#) (void \*ptr, uint16\_t nbytes)  
*Function calculate sum in big endian.*
- static uint16\_t [checksum\\_compute](#) (uint32\_t sum)  
*Function calculating from sum big endian to checksum big endian.*
- static void [calculate\\_checksum\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function calculate checksum for ip header and UDP package.*
- static void \* [get\\_pack\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function raw get pointer on UDP package.*
- [udp\\_pack\\_t](#) [init\\_udp\\_pack](#) (void)

- Function for create object UDP package.*

  - ssize\_t [set\\_port\\_source\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const port)

*Function for setting source port in UDP package.*
- ssize\_t [set\\_port\\_destination\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const port)

*Function for setting destination port in UDP package.*
- ssize\_t [set\\_ip\\_source\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const ip)

*Function for setting source ip in UDP package.*
- ssize\_t [set\\_ip\\_destination\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const ip)

*Function for setting destination ip in UDP package.*
- uint16\_t [get\\_size\\_data\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function give size data in UDP package.*
- ssize\_t [add\\_data\\_udp\\_pack](#) (udp\_pack\_t pack, void \*data, uint16\_t size)

*Function addition data in UDP package.*
- ssize\_t [set\\_data\\_udp\\_pack](#) (udp\_pack\_t pack, void \*data, const uint16\_t size)

*Function overriding data in UDP package.*
- ssize\_t [add\\_byte\\_udp\\_pack](#) (udp\_pack\_t pack, const uint8\_t byte)

*Function addition byte in UDP package.*
- ssize\_t [set\\_input\\_data\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function read data from stdin in UDP package.*
- ssize\_t [set\\_file\\_data\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const file\_name)

*Function read data from file in UDP package.*
- ssize\_t [set\\_interface\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const interface)

*Function for pick interface to send UDP package.*
- ssize\_t [send\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function to send UDP package.*
- ssize\_t [set\\_mac\\_address\\_udp\\_pack](#) (udp\_pack\_t pack, const char \*const mac\_address)

*Function setting mac address.*
- char \* [get\\_mac\\_address\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting mac address.*
- char \* [get\\_interface\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting interface.*
- char \* [get\\_port\\_source\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting port source.*
- char \* [get\\_port\\_destantion\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting port destantion.*
- char \* [get\\_ip\\_source\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting ip source.*
- char \* [get\\_ip\\_destantion\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting ip destantion.*
- void \* [get\\_data\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting data.*
- char \* [get\\_data\\_hex\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function for getting data hex.*
- void [destroy\\_udp\\_pack](#) (udp\_pack\_t pack)

*Function free UDP package.*

### 6.1.1 Detailed Description

Group function for work udp package.

## 6.1.2 Typedef Documentation

### 6.1.2.1 udp\_pack\_t

```
typedef struct udp_pack* udp_pack_t
```

UDP packet descriptor.

The primary type for working with the library. All functions accept this pointer as an argument.

## 6.1.3 Function Documentation

### 6.1.3.1 add\_byte\_udp\_pack()

```
ssize_t add_byte_udp_pack (  
    udp_pack_t pack,  
    const uint8_t byte)
```

Function addition byte in UDP package.

#### Note

You must call `init_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
in	<i>byte</i>	Addition byte in UDP package.

#### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;  
udp_pack_t pack = init_udp_pack();  
if (pack == NULL) {  
    ret = -1;  
    goto get_not_udp_pack;  
}  
set_date_udp_pack(pack, 'n');  
set_date_udp_pack(pack, '\0');  
get_not_udp_pack:  
destroy_udp_pack(pack);
```

### 6.1.3.2 add\_date\_udp\_pack()

```
ssize_t add_date_udp_pack (  
    udp_pack_t pack,  
    void * data,  
    uint16_t size)
```

Function addition data in UDP package.

#### Note

You must call `init_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

in	<i>data</i>	Addition data in UDP package.
in	<i>size</i>	Size addition data for UDP package.

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
const char * const message = "Hello, world";
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
add_data_udp_pack(pack, message, strlen(message));
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.3 calculate\_checksum\_udp\_pack()

```
void calculate_checksum_udp_pack (
    udp_pack_t pack) [static]
```

Function calculate checksum for ip header and UDP package.

### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

### Note

This function is private. Not used outside [udp\\_lib/udp.c](#)

#### 6.1.3.4 checksum\_compute()

```
uint16_t checksum_compute (
    uint32_t sum) [static]
```

Function calculating from sum big endian to checksum big endian.

### Parameters

in	<i>sum</i>	Sum in big endian.
----	------------	--------------------

### Returns

Checksum in big endian.

### Note

This function is private. Not used outside [udp\\_lib/udp.c](#)

### 6.1.3.5 destroy\_udp\_pack()

```
void destroy_udp_pack (
    udp_pack_t pack)
```

Function free UDP package.

#### Note

You must call `init_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work. Usage example.
---------	-------------	--------------------------------------

```

ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
// other code whit using udp_pack_t
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.6 get\_data\_hex\_udp\_pack()

```
char * get_data_hex_udp_pack (
    udp_pack_t pack)
```

Function for getting data hex.

#### Note

You must call `init_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

#### Returns

Data hex in UDP package. Usage example.

```

ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
{
    char * data = get_data_hex_udp_pack(pack);
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.7 get\_data\_udp\_pack()

```
void * get_data_udp_pack (
    udp_pack_t pack)
```

Function for getting data.

#### Note

You must call [init\\_udp\\_pack](#) before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

#### Returns

Data in UDP package. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
{
    void * data = get_data_udp_pack(pack);
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.8 get\_interface\_udp\_pack()

```
char * get_interface_udp_pack (
    udp_pack_t pack)
```

Function for getting interface.

#### Note

You must call [init\\_udp\\_pack](#) before this.

You can call [set\\_interface\\_udp\\_pack](#) before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

## Returns

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_interface_udp_pack(pack, "lo");
if (ret == -1)
    goto setting_not_interface;
{
    char * interface = NULL;
    interface = get_interface_udp_pack(pack);
    if (interface == NULL)
        getting_not_interface;
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_interface:
setting_not_interface:
get_not_udp_pack:
destroy_udp_pack(pack);
```

## 6.1.3.9 get\_ip\_destantion\_udp\_pack()

```
char * get_ip_destantion_udp_pack (
    udp_pack_t pack)
```

Function for getting ip destantion.

## Note

You must call `init_udp_pack` before this.

You can call `set_ip_destination_udp_pack` before this.

## Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

## Returns

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_ip_source_udp_pack(pack, "127.0.0.1");
if (ret == -1)
    goto setting_not_ip_destantion;
{
    char * ip_destantion = NULL;
    ip_destantion = get_ip_destantion_udp_pack(pack);
    if (ip_destantion == NULL)
        getting_not_ip_destantion;
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_ip_destantion:
setting_not_ip_destantion:
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.10 `get_ip_source_udp_pack()`

```
char * get_ip_source_udp_pack (  
    udp_pack_t pack)
```

Function for getting ip source.

#### Note

You must call `init_udp_pack` before this.

You can call `set_ip_source_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

#### Returns

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;  
udp_pack_t pack = init_udp_pack();  
if (pack == NULL) {  
    ret = -1;  
    goto get_not_udp_pack;  
}  
ret = set_ip_source_udp_pack(pack, "127.0.0.1");  
if (ret == -1)  
    goto setting_not_ip_source;  
{  
    char * ip_source = NULL;  
    ip_source = get_ip_source_udp_pack(pack);  
    if (ip_source == NULL)  
        getting_not_ip_source;  
    // other code whit udp_pack_t  
}  
// other code whit udp_pack_t  
getting_not_ip_source:  
setting_not_ip_source:  
get_not_udp_pack:  
destroy_udp_pack(pack);
```

### 6.1.3.11 `get_mac_address_udp_pack()`

```
char * get_mac_address_udp_pack (  
    udp_pack_t pack)
```

Function for getting mac address.

#### Note

You must call `init_udp_pack` before this.

You can call `set_mac_address_udp_pack` before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------



**Returns**

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_mac_address_udp_pack(pack, "ff:ff:ff:ff:ff:ff");
if (ret == -1)
    goto setting_not_mac_address;
{
    char * mac_address = NULL;
    mac_address = get_mac_address_udp_pack(pack);
    if (mac_address == NULL)
        getting_not_mac_address;
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_mac_address:
setting_not_mac_address:
get_not_udp_pack:
destroy_udp_pack(pack);
```

**6.1.3.12 get\_pack\_udp\_pack()**

```
void * get_pack_udp_pack (
    udp_pack_t pack) [static]
```

Function raw get pointer on UDP package.

**Parameters**

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

**Note**

This function is private. Not used outside [udp\\_lib/udp.c](#)

**6.1.3.13 get\_port\_destantion\_udp\_pack()**

```
char * get_port_destantion_udp_pack (
    udp_pack_t pack)
```

Function for getting port destantion.

**Note**

You must call [init\\_udp\\_pack](#) before this.

You can call [set\\_port\\_destination\\_udp\\_pack](#) before this.

**Parameters**

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

## Returns

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_port_destination_udp_pack(pack, "8001");
if (ret == -1)
    goto setting_not_port_destination;
{
    char * port_destantion = NULL;
    port_destantion = get_port_destantion_udp_pack(pack);
    if (port_destantion == NULL)
        getting_not_port_destantion;
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_port_destantion:
setting_not_port_destination:
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.14 get\_port\_source\_udp\_pack()

```
char * get_port_source_udp_pack (
    udp_pack_t pack)
```

Function for getting port source.

## Note

You must call [init\\_udp\\_pack](#) before this.

You can call [set\\_port\\_source\\_udp\\_pack](#) before this.

## Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

## Returns

String or NULL pointer is fail. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_port_source_udp_pack(pack, "8003");
if (ret == -1)
    goto setting_not_port_source;
{
    char * port_source = NULL;
    port_source = get_port_source_udp_pack(pack);
    if (port_source == NULL)
        getting_not_port_source;
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_port_source:
setting_not_port_source:
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.15 `get_size_data_udp_pack()`

```
uint16_t get_size_data_udp_pack (
    udp_pack_t pack)
```

Function give size data in UDP package.

Function for getting size data.

#### Note

You must call `init_udp_pack` before this.

#### Parameters

<code>in, out</code>	<code>pack</code>	UDP package for work.
----------------------	-------------------	-----------------------

#### Returns

size data in UDP package. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
get_size_data_udp_pack(pack);
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### Note

You must call `init_udp_pack` before this.

You can call `set_data_udp_pack` before this.

You can call `add_data_udp_pack` before this.

You can call `add_symbol_udp_pack` before this.

#### Parameters

<code>in, out</code>	<code>pack</code>	UDP package for work.
----------------------	-------------------	-----------------------

#### Returns

Length data in UDP package. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
{
    uint16_t size_data = get_size_data_udp_pack(pack);
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_size_data:
get_not_udp_pack:
destroy_udp_pack(pack);
```

Function give size data in UDP package.

**Note**

You must call [init\\_udp\\_pack](#) before this.

You can call [set\\_data\\_udp\\_pack](#) before this.

You can call [add\\_data\\_udp\\_pack](#) before this.

You can call [add\\_symbol\\_udp\\_pack](#) before this.

**Parameters**

<i>in, out</i>	<i>pack</i>	UDP package for work.
----------------	-------------	-----------------------

**Returns**

Length data in UDP package. Usage example.

```

ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
{
    uint16_t size_data = get_size_data_udp_pack(pack);
    // other code whit udp_pack_t
}
// other code whit udp_pack_t
getting_not_size_data:
get_not_udp_pack:
destroy_udp_pack(pack);

```

**6.1.3.16 inet\_port()**

```

uint16_t inet_port (
    const char *const port) [static]

```

Function support for parsing port.

**Parameters**

<i>in</i>	<i>port</i>	Port in string format.
-----------	-------------	------------------------

**Returns**

Port for big indian architect.

**Note**

This function is private. Not used outside [udp\\_lib/udp.c](#)

### 6.1.3.17 init\_udp\_pack()

```
udp_pack_t init_udp_pack (  
    void )
```

Function for create object UDP package.

#### Note

You must call [destroy\\_udp\\_pack](#) after this.

#### Returns

pointer or null on error. Usage example.

```
ssize_t ret = 0;  
udp_pack_t pack = init_udp_pack();  
if (pack == NULL) {  
    ret = -1;  
    goto get_not_udp_pack;  
}  
// other code whit using udp_pack_t  
get_not_udp_pack:  
destroy_udp_pack(pack);
```

### 6.1.3.18 send\_udp\_pack()

```
ssize_t send_udp_pack (  
    udp_pack_t pack)
```

Function to send UDP package.

#### Note

You must call [init\\_udp\\_pack](#) before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

#### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;  
udp_pack_t pack = init_udp_pack();  
if (pack == NULL) {  
    ret = -1;  
    goto get_not_udp_pack;  
}  
send_udp_pack(pack);  
get_not_udp_pack:  
destroy_udp_pack(pack);
```

#### 6.1.3.19 set\_data\_udp\_pack()

```
ssize_t set_data_udp_pack (  
    udp_pack_t pack,  
    void * data,  
    const uint16_t size)
```

Function overriding data in UDP package.

##### Note

You must call `init_udp_pack` before this.

##### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

in	<i>data</i>	New data in UDP package.
in	<i>size</i>	Size new data for UDP package.

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
const char * const message = "Hello, world";
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_data_udp_pack(pack, message, strlen(message));
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.20 set\_file\_data\_udp\_pack()

```
ssize_t set_file_data_udp_pack (
    udp_pack_t pack,
    const char *const file_name)
```

Function read data from file in UDP package.

### Note

You must call `init_udp_pack` before this.

### Parameters

in, out	<i>pack</i>	UDP package for work.
in	<i>file_name</i>	File name for read in UDP pack.

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_file_data_udp_pack(pack, "Hello.txt");
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.21 set\_input\_data\_udp\_pack()

```
ssize_t set_input_data_udp_pack (
    udp_pack_t pack)
```

Function read data from stdin in UDP package.

**Note**

You must call `init_udp_pack` before this.

**Parameters**

<code>in, out</code>	<i>pack</i>	UDP package for work.
----------------------	-------------	-----------------------

**Returns**

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_input_data_udp_pack(pack);
get_not_udp_pack:
destroy_udp_pack(pack);
```

**6.1.3.22 set\_interface\_udp\_pack()**

```
ssize_t set_interface_udp_pack (
    udp_pack_t pack,
    const char *const interface)
```

Function for pick interface to send UDP package.

**Note**

You must call `init_udp_pack` before this.

**Parameters**

<code>in, out</code>	<i>pack</i>	UDP package for work.
<code>in</code>	<i>interface</i>	Interface to send UDP pack.

**Returns**

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_interface_udp_pack(pack, "lo");
get_not_udp_pack:
destroy_udp_pack(pack);
```



### 6.1.3.23 set\_ip\_destination\_udp\_pack()

```
ssize_t set_ip_destination_udp_pack (  
    udp_pack_t pack,  
    const char *const ip)
```

Function for setting destination ip in UDP package.

#### Note

You must call [init\\_udp\\_pack](#) before this.

#### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

in	<i>ip</i>	Destination ip to send.
----	-----------	-------------------------

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_ip_destination_udp_pack(pack, "127.0.0.1");
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.24 set\_ip\_source\_udp\_pack()

```
ssize_t set_ip_source_udp_pack (
    udp_pack_t pack,
    const char *const ip)
```

Function for setting source ip in UDP package.

### Note

You must call [init\\_udp\\_pack](#) before this.

### Parameters

in, out	<i>pack</i>	UDP package for work.
in	<i>ip</i>	Source ip to send.

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_ip_source_udp_pack(pack, "127.0.0.1");
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.25 set\_mac\_address\_udp\_pack()

```
ssize_t set_mac_address_udp_pack (
    udp_pack_t pack,
    const char *const mac_address)
```

Function setting mac address.

### Note

You must call [init\\_udp\\_pack](#) before this.

### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

in	<i>mac_address</i>	String is mac address.
----	--------------------	------------------------

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
ret = set_mac_address_udp_pack(pack, "ff:ff:ff:ff:ff:ff");
if (ret == -1)
    goto setting_not_mac_address;
// other code whit udp_pack_t
setting_not_mac_address:
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.26 set\_port\_destination\_udp\_pack()

```
ssize_t set_port_destination_udp_pack (
    udp_pack_t pack,
    const char *const port)
```

Function for setting destination port in UDP package.

### Note

You must call [init\\_udp\\_pack](#) before this.

### Parameters

in, out	<i>pack</i>	UDP package for work.
in	<i>port</i>	Destination port to send.

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_port_destination_udp_pack(pack, "8003");
get_not_udp_pack:
destroy_udp_pack(pack);
```

#### 6.1.3.27 set\_port\_source\_udp\_pack()

```
ssize_t set_port_source_udp_pack (
    udp_pack_t pack,
    const char *const port)
```

Function for setting source port in UDP package.

### Note

You must call [init\\_udp\\_pack](#) before this.

### Parameters

in, out	<i>pack</i>	UDP package for work.
---------	-------------	-----------------------

in	<i>port</i>	Source port to send.
----	-------------	----------------------

### Returns

0 or -1 on error. Usage example.

```
ssize_t ret = 0;
udp_pack_t pack = init_udp_pack();
if (pack == NULL) {
    ret = -1;
    goto get_not_udp_pack;
}
set_port_source_udp_pack(pack, "8001");
get_not_udp_pack:
destroy_udp_pack(pack);
```

### 6.1.3.28 set\_size\_udp\_pack()

```
void set_size_udp_pack (
    udp_pack_t pack,
    const uint16_t size) [static]
```

Function raw write size UDP package.

### Parameters

in, out	<i>pack</i>	UDP package for work.
in	<i>size</i>	New size UDP package.

### Note

This function is private. Not used outside [udp\\_lib/udp.c](#)

### 6.1.3.29 sum\_compute()

```
uint32_t sum_compute (
    void * ptr,
    uint16_t nbytes) [static]
```

Function calculate sum in big endian.

### Parameters

in	<i>ptr</i>	Buffer for calculating sum in big endian.
in	<i>nbytes</i>	Size buffer for calculating sum.

### Returns

Sum buffer in big endian.

### Note

This function is private. Not used outside [udp\\_lib/udp.c](#)

## Chapter 7

# Directory Documentation

### 7.1 udp\_lib Directory Reference

#### Files

- file [udp.c](#)  
*Code file for work udp package.*
- file [udp.h](#)  
*Header file for work udp package.*



# Chapter 8

## Class Documentation

### 8.1 `pseudo_header` Struct Reference

Struct `pseudo_header` for calculate checksum for UDP package.

#### Public Attributes

- `uint32_t` `source_address`
- `uint32_t` `dest_address`
- `uint8_t` `placeholder`
- `uint8_t` `protocol`
- `uint16_t` `udp_length`

#### 8.1.1 Detailed Description

Struct `pseudo_header` for calculate checksum for UDP package.

##### Note

This struct is private. Not used outside `udp_lib/udp.c`

#### 8.1.2 Member Data Documentation

##### 8.1.2.1 `dest_address`

```
uint32_t pseudo_header::dest_address
```

Destination ip addresses

##### 8.1.2.2 `placeholder`

```
uint8_t pseudo_header::placeholder
```

Placeholder is 0x00.

### 8.1.2.3 protocol

```
uint8_t pseudo_header::protocol
```

Constant protocol.

### 8.1.2.4 source\_address

```
uint32_t pseudo_header::source_address
```

Source ip addresses

### 8.1.2.5 udp\_length

```
uint16_t pseudo_header::udp_length
```

Length UDP package.

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

- [udp\\_lib/udp.c](#)

## 8.2 udp\_head Struct Reference

Struct is header UDP pack.

### Public Attributes

- [uint16\\_t m\\_port\\_source](#)
- [uint16\\_t m\\_port\\_destination](#)
- [uint16\\_t m\\_length](#)
- [uint16\\_t m\\_checksum](#)

### 8.2.1 Detailed Description

Struct is header UDP pack.

#### Note

This struct is private. Not used outside [udp\\_lib/udp.c](#)



## 8.2.2 Member Data Documentation

### 8.2.2.1 m\_checksum

```
uint16_t udp_head::m_checksum
```

Calculated software checksum

### 8.2.2.2 m\_length

```
uint16_t udp_head::m_length
```

Length udp pack

### 8.2.2.3 m\_port\_destination

```
uint16_t udp_head::m_port_destination
```

Port destination

### 8.2.2.4 m\_port\_source

```
uint16_t udp_head::m_port_source
```

Port source

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

- [udp\\_lib/udp.c](#)

## 8.3 udp\_pack Struct Reference

Struct is UDP package.

### Public Attributes

- `char * m\_interface`
- `struct ethhdr m\_ethhdr`
- `struct iphdr m\_iphdr`
- `struct udp\_head m\_head`
- `uint8_t m\_data [MAX\_SIZE\_DATA]`

### 8.3.1 Detailed Description

Struct is UDP package.

#### Note

This struct is private. Not used outside [udp\\_lib/udp.c](#)

### 8.3.2 Member Data Documentation

#### 8.3.2.1 m\_data

```
uint8_t udp_pack::m_data[MAX_SIZE_DATA]
```

Data in UDP package.

#### 8.3.2.2 m\_ethhdr

```
struct ethhdr udp_pack::m_ethhdr
```

Ethernet header start UDP package.

#### 8.3.2.3 m\_head

```
struct udp\_head udp_pack::m_head
```

UDP header

#### 8.3.2.4 m\_interface

```
char* udp_pack::m_interface
```

Name ethernet interface.

#### 8.3.2.5 m\_iphdr

```
struct iphdr udp_pack::m_iphdr
```

IP header

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

- [udp\\_lib/udp.c](#)

# Chapter 9

## File Documentation

### 9.1 main.c File Reference

```
#include "udp_lib/udp.h"
#include <getopt.h>
#include <stddef.h>
#include <string.h>
```

#### Functions

- int [main](#) (int argc, char \*\*argv)

#### 9.1.1 Function Documentation

##### 9.1.1.1 main()

```
int main (
    int argc,
    char ** argv)
```

### 9.2 README.md File Reference

### 9.3 udp\_lib/udp.c File Reference

Code file for work udp package.

```
#include "udp_lib/udp.h"
#include <stdint.h>
#include <string.h>
#include <stdlib.h>
#include <stdio.h>
```

```
#include <sys/ioctl.h>
#include <sys/stat.h>
#include <unistd.h>
#include <fcntl.h>
#include <errno.h>
#include <net/if.h>
#include <linux/if_packet.h>
#include <net/ethernet.h>
#include <arpa/inet.h>
#include <sys/socket.h>
#include <netinet/ip.h>
```

## Classes

- struct [udp\\_head](#)  
*Struct is header UDP pack.*
- struct [udp\\_pack](#)  
*Struct is UDP package.*
- struct [pseudo\\_header](#)  
*Struct [pseudo\\_header](#) for calculate checksum for UDP package.*

## Macros

- #define [PACKED](#) \_\_attribute\_\_((packed))
- #define [HEAD\\_ETH](#) sizeof(struct ethhdr)
- #define [HEAD\\_UDP](#) sizeof(struct [udp\\_head](#))
- #define [HEAD\\_IP](#) sizeof(struct iphdr)
- #define [HEAD\\_UDP\\_IP](#) ([HEAD\\_IP](#) + [HEAD\\_UDP](#))
- #define [MAX\\_SIZE\\_DATA](#) (0xFFFF - [HEAD\\_UDP\\_IP](#))
- #define [NULL\\_CHECKSUM](#) 0x0000
- #define [MIN](#)(left, right)
- #define [HEAD\\_PSEUDO](#) sizeof(struct [pseudo\\_header](#))

## Functions

- [udp\\_pack\\_t](#) [init\\_udp\\_pack](#) (void)  
*Function for create object UDP package.*
- static uint16\_t [inet\\_port](#) (const char \*const port)  
*Function support for parsing port.*
- ssize\_t [set\\_port\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const port)  
*Function for setting source port in UDP package.*
- ssize\_t [set\\_port\\_destination\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const port)  
*Function for setting destination port in UDP package.*
- ssize\_t [set\\_ip\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const ip)  
*Function for setting source ip in UDP package.*
- ssize\_t [set\\_ip\\_destination\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const ip)  
*Function for setting destination ip in UDP package.*
- static void [set\\_size\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const uint16\_t size)  
*Function raw write size UDP package.*
- uint16\_t [get\\_size\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

- Function for getting size data.*

  - ssize\_t [add\\_date\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, void \*data, const uint16\_t size)

*Function addition data in UDP package.*

  - ssize\_t [set\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, void \*data, uint16\_t size)

*Function overriding data in UDP package.*

  - ssize\_t [add\\_byte\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, uint8\_t byte)

*Function addition byte in UDP package.*

  - ssize\_t [set\\_input\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

*Function read data from stdin in UDP package.*

  - ssize\_t [set\\_file\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const file\_name)

*Function read data from file in UDP package.*

  - static uint32\_t [sum\\_compute](#) (void \*ptr, uint16\_t nbytes)

*Function calculate sum in big endian.*

  - static uint16\_t [checksum\\_compute](#) (uint32\_t sum)

*Function calculating from sum big endian to checksum big endian.*

  - static void [calculate\\_checksum\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

*Function calculate checksum for ip header and UDP package.*

  - ssize\_t [set\\_interface\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const interface)

*Function for pick interface to send UDP package.*

  - static void \* [get\\_pack\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

*Function raw get pointer on UDP package.*

  - ssize\_t [send\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

*Function to send UDP package.*

  - void [destroy\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)

*Function free UDP package.*

### 9.3.1 Detailed Description

Code file for work udp package.

Author

Vladsanin777

### 9.3.2 Macro Definition Documentation

#### 9.3.2.1 HEAD\_ETH

```
#define HEAD_ETH sizeof(struct ethhdr)
```

#### 9.3.2.2 HEAD\_IP

```
#define HEAD_IP sizeof(struct iphdr)
```

#### 9.3.2.3 HEAD\_PSEUDO

```
#define HEAD_PSEUDO sizeof(struct pseudo\_header)
```

#### 9.3.2.4 HEAD\_UDP

```
#define HEAD_UDP sizeof(struct udp_head)
```

#### 9.3.2.5 HEAD\_UDP\_IP

```
#define HEAD_UDP_IP (HEAD_IP + HEAD_UDP)
```

#### 9.3.2.6 MAX\_SIZE\_DATA

```
#define MAX_SIZE_DATA (0xFFFF - HEAD_UDP_IP)
```

#### 9.3.2.7 MIN

```
#define MIN(  
    left,  
    righth)
```

##### Value:

```
((left) < (righth)) ? (left) : (righth)
```

#### 9.3.2.8 NULL\_CHECKSUM

```
#define NULL_CHECKSUM 0x0000
```

#### 9.3.2.9 PACKED

```
#define PACKED __attribute__((packed))
```

## 9.4 udp\_lib/udp.h File Reference

Header file for work udp package.

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

### Typedefs

- typedef struct [udp\\_pack](#) \* [udp\\_pack\\_t](#)  
*UDP packet descriptor.*

## Functions

- [udp\\_pack\\_t init\\_udp\\_pack](#) (void)  
*Function for create object UDP package.*
- [ssize\\_t set\\_port\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const port)  
*Function for setting source port in UDP package.*
- [ssize\\_t set\\_port\\_destination\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const port)  
*Function for setting destination port in UDP package.*
- [ssize\\_t set\\_ip\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const ip)  
*Function for setting source ip in UDP package.*
- [ssize\\_t set\\_ip\\_destination\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const ip)  
*Function for setting destination ip in UDP package.*
- [uint16\\_t get\\_size\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function give size data in UDP package.*
- [ssize\\_t add\\_date\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, void \*data, [uint16\\_t](#) size)  
*Function addition data in UDP package.*
- [ssize\\_t set\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, void \*data, const [uint16\\_t](#) size)  
*Function overriding data in UDP package.*
- [ssize\\_t add\\_byte\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const [uint8\\_t](#) byte)  
*Function addition byte in UDP package.*
- [ssize\\_t set\\_input\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function read data from stdin in UDP package.*
- [ssize\\_t set\\_file\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const file\_name)  
*Function read data from file in UDP package.*
- [ssize\\_t set\\_interface\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const interface)  
*Function for pick interface to send UDP package.*
- [ssize\\_t send\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function to send UDP package.*
- [ssize\\_t set\\_mac\\_address\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack, const char \*const mac\_address)  
*Function setting mac address.*
- [char \\* get\\_mac\\_address\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting mac address.*
- [char \\* get\\_interface\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting interface.*
- [char \\* get\\_port\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting port source.*
- [char \\* get\\_port\\_destantion\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting port destantion.*
- [char \\* get\\_ip\\_source\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting ip source.*
- [char \\* get\\_ip\\_destantion\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting ip destantion.*
- [void \\* get\\_data\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting data.*
- [char \\* get\\_data\\_hex\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function for getting data hex.*
- [void destroy\\_udp\\_pack](#) ([udp\\_pack\\_t](#) pack)  
*Function free UDP package.*

### 9.4.1 Detailed Description

Header file for work udp package.

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## 9.5 udp.h

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

```

00001
00006
00007 #include <stdint.h>
00008 #include <stdlib.h>
00009
00015
00019 struct udp_pack;
00020
00026 typedef struct udp_pack * udp_pack_t;
00027
00045 udp_pack_t init_udp_pack(void);
00046
00066 ssize_t set_port_source_udp_pack(udp_pack_t pack, const char * const port);
00067
00087 ssize_t set_port_destination_udp_pack(udp_pack_t pack, const char * const port);
00088
00108 ssize_t set_ip_source_udp_pack(udp_pack_t pack, const char * const ip);
00109
00129 ssize_t set_ip_destination_udp_pack(udp_pack_t pack, const char * const ip);
00130
00149 uint16_t get_size_data_udp_pack(udp_pack_t pack);
00150
00172 ssize_t add_data_udp_pack(udp_pack_t pack, void * data, uint16_t size);
00173
00195 ssize_t set_data_udp_pack(udp_pack_t pack, void * data, \
00196     const uint16_t size);
00197
00218 ssize_t add_byte_udp_pack(udp_pack_t pack, \
00219     const uint8_t byte);
00220
00239 ssize_t set_input_data_udp_pack(udp_pack_t pack);
00240
00260 ssize_t set_file_data_udp_pack( \
00261     udp_pack_t pack, const char * const file_name);
00262
00282 ssize_t set_interface_udp_pack( \
00283     udp_pack_t pack, const char * const interface);
00284
00303 ssize_t send_udp_pack(udp_pack_t pack);
00304
00328 ssize_t set_mac_address_udp_pack(udp_pack_t pack, \
00329     const char * const mac_address);
00330
00362 char * get_mac_address_udp_pack(udp_pack_t pack);
00363
00395 char * get_interface_udp_pack(udp_pack_t pack);
00396
00428 char * get_port_source_udp_pack(udp_pack_t pack);
00429
00461 char * get_port_destantion_udp_pack(udp_pack_t pack);
00462
00494 char * get_ip_source_udp_pack(udp_pack_t pack);
00495
00527 char * get_ip_destantion_udp_pack(udp_pack_t pack);
00528
00555 uint16_t get_size_data_udp_pack(udp_pack_t pack);
00556
00579 void * get_data_udp_pack(udp_pack_t pack);
00580
00603 char * get_data_hex_udp_pack(udp_pack_t pack);
00604
00622 void destroy_udp_pack(udp_pack_t pack);
00623

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