

**NAME**

**mbchain, mb\_init, mb\_initm, mb\_done, mb\_detach, mb\_fixhdr, mb\_reserve, mb\_put\_uint8, mb\_put\_uint16be, mb\_put\_uint16le, mb\_put\_uint32be, mb\_put\_uint32le, mb\_put\_int64be, mb\_put\_int64le, mb\_put\_mem, mb\_put\_mbuf, mb\_put\_uio** - set of functions to build an mbuf chain from various data types

**SYNOPSIS**

**options** LIBMCHAIN kldload libmchain

**#include** <sys/param.h>

**#include** <sys/uio.h>

**#include** <sys/mchain.h>

*int*

**mb\_init**(*struct mbchain \*mbp*);

*void*

**mb\_initm**(*struct mbchain \*mbp, struct mbuf \*m*);

*void*

**mb\_done**(*struct mbchain \*mbp*);

*struct mbuf \**

**mb\_detach**(*struct mbchain \*mbp*);

*int*

**mb\_fixhdr**(*struct mbchain \*mbp*);

*caddr\_t*

**mb\_reserve**(*struct mbchain \*mbp, int size*);

*int*

**mb\_put\_uint8**(*struct mbchain \*mbp, uint8\_t x*);

*int*

**mb\_put\_uint16be**(*struct mbchain \*mbp, uint16\_t x*);

*int*

**mb\_put\_uint16le**(*struct mbchain \*mbp, uint16\_t x*);

*int***mb\_put\_uint32be**(*struct mbchain \*mbp, uint32\_t x*);*int***mb\_put\_uint32le**(*struct mbchain \*mbp, uint32\_t x*);*int***mb\_put\_int64be**(*struct mbchain \*mbp, int64\_t x*);*int***mb\_put\_int64le**(*struct mbchain \*mbp, int64\_t x*);*int***mb\_put\_mem**(*struct mbchain \*mbp, c\_caddr\_t source, int size, int type*);*int***mb\_put\_mbuf**(*struct mbchain \*mbp, struct mbuf \*m*);*int***mb\_put\_uio**(*struct mbchain \*mbp, struct uio \*uiop, int size*);**DESCRIPTION**

These functions are used to compose mbuf chains from various data types. The *mbchain* structure is used as a working context and should be initialized with a call to either **mb\_init()** or **mb\_initm()**. It has the following fields:

*mb\_top* (*struct mbuf \**) A pointer to the top of constructed mbuf chain.

*mb\_cur* (*struct mbuf \**) A pointer to the currently filled mbuf.

*mb\_mleft* (*int*) Number of bytes left in the current mbuf.

*mb\_count* (*int*) Total number of bytes placed in the mbuf chain.

*mb\_copy* (*mb\_copy\_t \**) User-defined function to perform a copy into mbuf; useful if any unusual data conversion is necessary.

*mb\_ufdata* (*void \**) User-supplied data which can be used in the *mb\_copy* function.

**mb\_done()** function disposes an mbuf chain pointed to by *mbp->mb\_top* field and sets the field to

NULL.

**mb\_detach()** function returns the value of *mbp->mb\_top* field and sets its value to NULL.

**mb\_fixhdr()** recalculates the length of an mbuf chain and updates the *m\_pkthdr.len* field of the first mbuf in the chain. It returns the calculated length.

**mb\_reserve()** ensures that the object of the length specified by the *size* argument will fit in the current mbuf (mbuf allocation is performed if necessary), and advances all pointers as if the real data was placed. Returned value will point to the beginning of the reserved space. Note that the size of the object should not exceed MLEN bytes.

All **mb\_put\_\***() functions perform an actual copy of the data into mbuf chain. Functions which have **le** or **be** suffixes will perform conversion to the little- or big-endian data formats.

**mb\_put\_mem()** function copies *size* bytes of data specified by the *source* argument to an mbuf chain. The *type* argument specifies the method used to perform a copy, and can be one of the following:

MB\_MSYSTEM

Use **bcopy()** function.

MB\_MUSER Use `copyin(9)` function.

MB\_MINLINE Use an "inline" loop which does not call any function.

MB\_MZERO Do not copy any data, but just fill the destination with zero bytes.

MB\_MCUSTOM

Call function specified by the *mbp->mb\_copy* field.

## RETURN VALUES

All *int* functions except **mb\_fixhdr()** return zero if successful and an error code otherwise.

*Note:* after failure of any function, an mbuf chain is left in the broken state, and only **mb\_done()** function can safely be called to destroy it.

## EXAMPLES

```
struct mbchain *mbp;  
struct mbuf *m;
```

```
mb_init(mbp);
mb_put_uint8(mbp, 33);
mb_put_uint16le(mbp, length);
m = m_copym(mbp->mb_top, 0, M_COPYALL, M_WAIT);
send(m);
mb_done(mbp);
```

**SEE ALSO**

mbuf(9), mdchain(9)

**AUTHORS**

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