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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'BIO\_callback\_ctrl.3openssl' command**

**\$ man BIO\_callback\_ctrl.3openssl**

BIO\_CTRL(3openssl)            OpenSSL            BIO\_CTRL(3openssl)

### NAME

BIO\_ctrl, BIO\_callback\_ctrl, BIO\_ptr\_ctrl, BIO\_int\_ctrl, BIO\_reset,  
BIO\_seek, BIO\_tell, BIO\_flush, BIO\_eof, BIO\_set\_close, BIO\_get\_close,  
BIO\_pending, BIO\_wpending, BIO\_ctrl\_pending, BIO\_ctrl\_wpending,  
BIO\_get\_info\_callback, BIO\_set\_info\_callback, BIO\_info\_cb,  
BIO\_get\_ktls\_send, BIO\_get\_ktls\_recv - BIO control operations

### SYNOPSIS

```
#include <openssl/bio.h>

typedef int BIO_info_cb(BIO *b, int state, int res);

long BIO_ctrl(BIO *bp, int cmd, long larg, void *parg);

long BIO_callback_ctrl(BIO *b, int cmd, BIO_info_cb *cb);

void *BIO_ptr_ctrl(BIO *bp, int cmd, long larg);

long BIO_int_ctrl(BIO *bp, int cmd, long larg, int iarg);

int BIO_reset(BIO *b);

int BIO_seek(BIO *b, int ofs);

int BIO_tell(BIO *b);

int BIO_flush(BIO *b);

int BIO_eof(BIO *b);

int BIO_set_close(BIO *b, long flag);

int BIO_get_close(BIO *b);

int BIO_pending(BIO *b);

int BIO_wpending(BIO *b);
```

```
size_t BIO_ctrl_pending(BIO *b);
size_t BIO_ctrl_wpending(BIO *b);
int BIO_get_info_callback(BIO *b, BIO_info_cb **cbp);
int BIO_set_info_callback(BIO *b, BIO_info_cb *cb);
int BIO_get_ktls_send(BIO *b);
int BIO_get_ktls_rcv(BIO *b);
```

## DESCRIPTION

`BIO_ctrl()`, `BIO_callback_ctrl()`, `BIO_ptr_ctrl()` and `BIO_int_ctrl()` are BIO "control" operations taking arguments of various types. These functions are not normally called directly, various macros are used instead. The standard macros are described below, macros specific to a particular type of BIO are described in the specific BIOs manual page as well as any special features of the standard calls.

`BIO_reset()` typically resets a BIO to some initial state, in the case of file related BIOs for example it rewinds the file pointer to the start of the file.

`BIO_seek()` resets a file related BIO's (that is file descriptor and FILE BIOs) file position pointer to ofs bytes from start of file.

`BIO_tell()` returns the current file position of a file related BIO.

`BIO_flush()` normally writes out any internally buffered data, in some cases it is used to signal EOF and that no more data will be written.

`BIO_eof()` returns 1 if the BIO has read EOF, the precise meaning of "EOF" varies according to the BIO type.

`BIO_set_close()` sets the BIO b close flag to flag. flag can take the value `BIO_CLOSE` or `BIO_NOCLOSE`. Typically `BIO_CLOSE` is used in a source/sink BIO to indicate that the underlying I/O stream should be closed when the BIO is freed.

`BIO_get_close()` returns the BIOs close flag.

`BIO_pending()`, `BIO_ctrl_pending()`, `BIO_wpending()` and `BIO_ctrl_wpending()` return the number of pending characters in the BIOs read and write buffers. Not all BIOs support these calls.

`BIO_ctrl_pending()` and `BIO_ctrl_wpending()` return a `size_t` type and are functions, `BIO_pending()` and `BIO_wpending()` are macros which call

BIO\_ctrl()).

BIO\_get\_ktls\_send() returns 1 if the BIO is using the Kernel TLS data-path for sending. Otherwise, it returns zero. BIO\_get\_ktls\_recv() returns 1 if the BIO is using the Kernel TLS data-path for receiving. Otherwise, it returns zero.

## RETURN VALUES

BIO\_reset() normally returns 1 for success and  $\leq 0$  for failure. File BIOs are an exception, they return 0 for success and -1 for failure.

BIO\_seek() and BIO\_tell() both return the current file position on success and -1 for failure, except file BIOs which for BIO\_seek() always return 0 for success and -1 for failure.

BIO\_flush() returns 1 for success and  $\leq 0$  for failure.

BIO\_eof() returns 1 if EOF has been reached, 0 if not, or negative values for failure.

BIO\_set\_close() returns 1 on success or  $\leq 0$  for failure.

BIO\_get\_close() returns the close flag value: BIO\_CLOSE or BIO\_NOCLOSE.

It also returns other negative values if an error occurs.

BIO\_pending(), BIO\_ctrl\_pending(), BIO\_wpending() and BIO\_ctrl\_wpending() return the amount of pending data. BIO\_pending() and BIO\_wpending() return negative value or 0 on error.

BIO\_ctrl\_pending() and BIO\_ctrl\_wpending() return 0 on error.

BIO\_get\_ktls\_send() returns 1 if the BIO is using the Kernel TLS data-path for sending. Otherwise, it returns zero. BIO\_get\_ktls\_recv() returns 1 if the BIO is using the Kernel TLS data-path for receiving. Otherwise, it returns zero.

## NOTES

BIO\_flush(), because it can write data may return 0 or -1 indicating that the call should be retried later in a similar manner to BIO\_write\_ex(). The BIO\_should\_retry() call should be used and appropriate action taken is the call fails.

The return values of BIO\_pending() and BIO\_wpending() may not reliably determine the amount of pending data in all cases. For example in the case of a file BIO some data may be available in the FILE structures

internal buffers but it is not possible to determine this in a portably way. For other types of BIO they may not be supported.

Filter BIOs if they do not internally handle a particular BIO\_ctrl() operation usually pass the operation to the next BIO in the chain.

This often means there is no need to locate the required BIO for a particular operation, it can be called on a chain and it will be automatically passed to the relevant BIO. However, this can cause unexpected results: for example no current filter BIOs implement BIO\_seek(), but this may still succeed if the chain ends in a FILE or file descriptor BIO.

Source/sink BIOs return an 0 if they do not recognize the BIO\_ctrl() operation.

## BUGS

Some of the return values are ambiguous and care should be taken. In particular a return value of 0 can be returned if an operation is not supported, if an error occurred, if EOF has not been reached and in the case of BIO\_seek() on a file BIO for a successful operation.

In older versions of OpenSSL the BIO\_ctrl\_pending() and BIO\_ctrl\_wpending() could return values greater than INT\_MAX on error.

## HISTORY

The BIO\_get\_ktls\_send() and BIO\_get\_ktls\_rcv() macros were added in OpenSSL 3.0. They were modified to never return -1 in OpenSSL 3.0.4.

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