## NAME

BIO\_set\_callback, BIO\_get\_callback, BIO\_set\_callback\_arg, BIC BIO debug callback - BIO callback functions

## BIO\_get\_callback\_arg,

### SYNOPSIS

#include <openssl/bio.h>

```
#define BI0_set_callback(b,cb) ((b)->callback=(cb))
#define BI0_get_callback(b) ((b)->callback)
#define BI0_set_callback_arg(b,arg) ((b)->cb_arg=(char *)(arg))
#define BI0_get_callback_arg(b) ((b)->cb_arg)
```

```
long BIO_debug_callback(BIO *bio,int cmd,const char *argp,int argi,
long argl,long ret);
```

```
typedef long (*callback)(BIO *b, int oper, const char *argp,
int argi, long argl, long retvalue);
```

## DESCRIPTION

*BIO\_set\_callback()* and *BIO\_get\_callback()* set and retrieve the BIO callback, they are both macros. The callback is called during most high level BIO operations. It can be used for debugging purposes to trace operations on a BIO or to modify its operation.

*BIO\_set\_callback\_arg()* and *BIO\_get\_callback\_arg()* are macros which can be used to set and retrieve an argument for use in the callback.

 $BIO\_debug\_callback()$  is a standard debugging callback which prints out information relating to each BIO operation. If the callback argument is set if is interpreted as a BIO to send the information to, otherwise stderr is used.

callback() is the callback function itself. The meaning of each argument is described below.

The BIO the callback is attached to is passed in **b**.

**oper** is set to the operation being performed. For some operations the callback is called twice, once before and once after the actual operation, the latter case has **oper** or'ed with BIO CB RETURN.

The meaning of the arguments **argp**, **argi** and **argl** depends on the value of **oper**, that is the operation being performed.

**retvalue** is the return value that would be returned to the application if no callback were present. The actual value returned is the return value of the callback itself. In the case of callbacks called before the actual BIO operation 1 is placed in retvalue, if the return value is not positive it will be immediately returned to the application and the BIO operation will not be performed.

The callback should normally simply return **retvalue** when it has finished processing, unless if specifically wishes to modify the value returned to the application.

## CALLBACK OPERATIONS

#### BIO free(b)

callback(b, BIO\_CB\_FREE, NULL, 0L, 0L, 1L) is called before the free operation.

#### BIO\_read(b, out, outl)

callback(b, BIO\_CB\_READ, out, out, 0L, 1L) is called before the read and callback(b, BIO\_CB\_READ|BIO\_CB\_RETURN, out, outl, 0L, retvalue) after.

#### BIO write(b, in, inl)

callback(b, BIO\_CB\_WRITE, in, inl, 0L, 1L) is called before the write and callback(b, BIO\_CB\_WRITE|BIO\_CB\_RETURN, in, inl, 0L, retvalue) after.

## BIO gets(b, out, out)

callback(b, BIO\_CB\_GETS, out, outl, 0L, 1L) is called before the operation and callback(b, BIO\_CB\_GETS|BIO\_CB\_RETURN, out, outl, 0L, retvalue) after.

## BIO\_puts(b, in)

callback(b, BIO\_CB\_WRITE, in, 0, 0L, 1L) is called before the operation and callback(b, BIO\_CB\_WRITE|BIO\_CB\_RETURN, in, 0, 0L, retvalue) after.

## BIO\_ctrl(BIO \*b, int cmd, long larg, void \*parg)

## EXAMPLE

The *BIO\_debug\_callback()* function is a good example, its source is in crypto/bio/bio\_cb.c

# SEE ALSO

TBA