

**NAME**

SSL\_set\_bio, SSL\_set0\_rbio, SSL\_set0\_wbio - connect the SSL object with a BIO

**SYNOPSIS**

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

void SSL_set_bio(SSL *ssl, BIO *rbio, BIO *wbio);
void SSL_set0_rbio(SSL *s, BIO *rbio);
void SSL_set0_wbio(SSL *s, BIO *wbio);
```

**DESCRIPTION**

*SSL\_set0\_rbio()* connects the BIO **rbio** for the read operations of the **ssl** object. The SSL engine inherits the behaviour of **rbio**. If the BIO is non-blocking then the **ssl** object will also have non-blocking behaviour. This function transfers ownership of **rbio** to **ssl**. It will be automatically freed using *BIO\_free\_all(3)* when the **ssl** is freed. On calling this function, any existing **rbio** that was previously set will also be freed via a call to *BIO\_free\_all(3)* (this includes the case where **rbio** is set to the same value as previously).

*SSL\_set0\_wbio()* works in the same as *SSL\_set0\_rbio()* except that it connects the BIO **wbio** for the write operations of the **ssl** object. Note that if the **rbio** and **wbio** are the same then *SSL\_set0\_rbio()* and *SSL\_set0\_wbio()* each take ownership of one reference. Therefore it may be necessary to increment the number of references available using *BIO\_up\_ref(3)* before calling the set0 functions.

*SSL\_set\_bio()* does a similar job as *SSL\_set0\_rbio()* and *SSL\_set0\_wbio()* except that it connects both the **rbio** and the **wbio** at the same time. This function transfers the ownership of **rbio** and **wbio** to **ssl** except that the rules for this are much more complex. For this reason this function is considered a legacy function and *SSL\_set0\_rbio()* and *SSL\_set0\_wbio()* should be used in preference. The ownership rules are as follows:

- If neither the **rbio** or **wbio** have changed from their previous values then nothing is done.
- If the **rbio** and **wbio** parameters are different and both are different to their previously set values then one reference is consumed for the **rbio** and one reference is consumed for the **wbio**.
- If the **rbio** and **wbio** parameters are the same and the **rbio** is not the same as the previously set value then one reference is consumed.
- If the **rbio** and **wbio** parameters are the same and the **rbio** is the same as the previously set value, then no additional references are consumed.
- If the **rbio** and **wbio** parameters are different and the **rbio** is the same as the previously set value then one reference is consumed for the **wbio** and no references are consumed for the **rbio**.
- If the **rbio** and **wbio** parameters are different and the **wbio** is the same as the previously set value and the old **rbio** and **wbio** values were the same as each other then one reference is consumed for the **rbio** and no references are consumed for the **wbio**.
- If the **rbio** and **wbio** parameters are different and the **wbio** is the same as the previously set value and the old **rbio** and **wbio** values were different to each other then one reference is consumed for the **rbio** and one reference is consumed for the **wbio**.

**RETURN VALUES**

*SSL\_set\_bio()*, *SSL\_set\_rbio()* and *SSL\_set\_wbio()* cannot fail.

**SEE ALSO**

*SSL\_get\_rbio(3)*, *SSL\_connect(3)*, *SSL\_accept(3)*, *SSL\_shutdown(3)*, *ssl(7)*, *bio(7)*

**HISTORY**

*SSL\_set0\_rbio()* and *SSL\_set0\_wbio()* were added in OpenSSL 1.1.0.

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