

**NAME**

SSL\_get\_client\_random, SSL\_get\_server\_random, SSL\_SESSION\_get\_master\_key,  
SSL\_SESSION\_set1\_master\_key - get internal TLS/SSL random values and get/set master key

**SYNOPSIS**

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

```
size_t SSL_get_client_random(const SSL *ssl, unsigned char *out, size_t outlen);  
size_t SSL_get_server_random(const SSL *ssl, unsigned char *out, size_t outlen);  
size_t SSL_SESSION_get_master_key(const SSL_SESSION *session,  
                                unsigned char *out, size_t outlen);  
int SSL_SESSION_set1_master_key(SSL_SESSION *sess, const unsigned char *in,  
                               size_t len);
```

**DESCRIPTION**

**SSL\_get\_client\_random()** extracts the random value sent from the client to the server during the initial SSL/TLS handshake. It copies as many bytes as it can of this value into the buffer provided in **out**, which must have at least **outlen** bytes available. It returns the total number of bytes that were actually copied. If **outlen** is zero, **SSL\_get\_client\_random()** copies nothing, and returns the total size of the client\_random value.

**SSL\_get\_server\_random()** behaves the same, but extracts the random value sent from the server to the client during the initial SSL/TLS handshake.

**SSL\_SESSION\_get\_master\_key()** behaves the same, but extracts the master secret used to guarantee the security of the SSL/TLS session. This one can be dangerous if misused; see NOTES below.

**SSL\_SESSION\_set1\_master\_key()** sets the master key value associated with the SSL\_SESSION **sess**. For example, this could be used to set up a session based PSK (see **SSL\_CTX\_set\_psk\_use\_session\_callback(3)**). The master key of length **len** should be provided at **in**. The supplied master key is copied by the function, so the caller is responsible for freeing and cleaning any memory associated with **in**. The caller must ensure that the length of the key is suitable for the ciphersuite associated with the SSL\_SESSION.

**NOTES**

You probably shouldn't use these functions.

These functions expose internal values from the TLS handshake, for use in low-level protocols. You probably should not use them, unless you are implementing something that needs access to the internal protocol details.

Despite the names of **SSL\_get\_client\_random()** and **SSL\_get\_server\_random()**, they ARE NOT random number generators. Instead, they return the mostly-random values that were already generated and used in the TLS protocol. Using them in place of **RAND\_bytes()** would be grossly foolish.

The security of your TLS session depends on keeping the master key secret: do not expose it, or any information about it, to anybody. If you need to calculate another secret value that depends on the master secret, you should probably use **SSL\_export\_keying\_material()** instead, and forget that you ever saw these functions.

In current versions of the TLS protocols, the length of `client_random` (and also `server_random`) is always `SSL3_RANDOM_SIZE` bytes. Support for other `outlen` arguments to the **SSL\_get\_\*\_random()** functions is provided in case of the unlikely event that a future version or variant of TLS uses some other length there.

Finally, though the "client\_random" and "server\_random" values are called "random", many TLS implementations will generate four bytes of those values based on their view of the current time.

## RETURN VALUES

**SSL\_SESSION\_set1\_master\_key()** returns 1 on success or 0 on failure.

For the other functions, if **outlen** is greater than 0 then these functions return the number of bytes actually copied, which will be less than or equal to **outlen**. If **outlen** is 0 then these functions return the maximum number of bytes they would copy -- that is, the length of the underlying field.

## SEE ALSO

`ssl(7)`, **RAND\_bytes(3)**, **SSL\_export\_keying\_material(3)**, **SSL\_CTX\_set\_psk\_use\_session\_callback(3)**

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