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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'SSL\_set\_ciphersuites.3ossl' command**

**\$ man SSL\_set\_ciphersuites.3ossl**

SSL\_CTX\_SET\_CIPHER\_LIST(3ossl)    OpenSSL    SSL\_CTX\_SET\_CIPHER\_LIST(3ossl)

### NAME

SSL\_CTX\_set\_cipher\_list, SSL\_set\_cipher\_list, SSL\_CTX\_set\_ciphersuites,  
SSL\_set\_ciphersuites, OSSL\_default\_cipher\_list,  
OSSL\_default\_ciphersuites - choose list of available SSL\_CIPHERs

### SYNOPSIS

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

int SSL_CTX_set_cipher_list(SSL_CTX *ctx, const char *str);
int SSL_set_cipher_list(SSL *ssl, const char *str);

int SSL_CTX_set_ciphersuites(SSL_CTX *ctx, const char *str);
int SSL_set_ciphersuites(SSL *s, const char *str);

const char *OSSL_default_cipher_list(void);
const char *OSSL_default_ciphersuites(void);
```

### DESCRIPTION

SSL\_CTX\_set\_cipher\_list() sets the list of available ciphers (TLSv1.2 and below) for ctx using the control string str. The format of the string is described in openssl-ciphers(1). The list of ciphers is

inherited by all ssl objects created from ctx. This function does not impact TLSv1.3 ciphersuites. Use `SSL_CTX_set_ciphersuites()` to configure those.

`SSL_set_cipher_list()` sets the list of ciphers (TLSv1.2 and below) only for ssl.

`SSL_CTX_set_ciphersuites()` is used to configure the available TLSv1.3 ciphersuites for ctx. This is a simple colon (":") separated list of TLSv1.3 ciphersuite names in order of preference. Valid TLSv1.3 ciphersuite names are:

`TLS_AES_128_GCM_SHA256`

`TLS_AES_256_GCM_SHA384`

`TLS_CHACHA20_POLY1305_SHA256`

`TLS_AES_128_CCM_SHA256`

`TLS_AES_128_CCM_8_SHA256`

An empty list is permissible. The default value for the this setting is:

`"TLS_AES_256_GCM_SHA384:TLS_CHACHA20_POLY1305_SHA256:TLS_AES_128_GCM_SHA256"`

`SSL_set_ciphersuites()` is the same as `SSL_CTX_set_ciphersuites()` except it configures the ciphersuites for ssl.

`OSSL_default_cipher_list()` returns the default cipher string for TLSv1.2 (and earlier) ciphers. `OSSL_default_ciphersuites()` returns the default cipher string for TLSv1.3 ciphersuites.

## NOTES

The control string `str` for `SSL_CTX_set_cipher_list()`, `SSL_set_cipher_list()`, `SSL_CTX_set_ciphersuites()` and

SSL\_set\_ciphersuites() should be universally usable and not depend on details of the library configuration (ciphers compiled in). Thus no syntax checking takes place. Items that are not recognized, because the corresponding ciphers are not compiled in or because they are mistyped, are simply ignored. Failure is only flagged if no ciphers could be collected at all.

It should be noted, that inclusion of a cipher to be used into the list is a necessary condition. On the client side, the inclusion into the list is also sufficient unless the security level excludes it. On the server side, additional restrictions apply. All ciphers have additional requirements. ADH ciphers don't need a certificate, but DH-parameters must have been set. All other ciphers need a corresponding certificate and key.

A RSA cipher can only be chosen, when a RSA certificate is available. RSA ciphers using DHE need a certificate and key and additional DH-parameters (see SSL\_CTX\_set\_tmp\_dh\_callback(3)).

A DSA cipher can only be chosen, when a DSA certificate is available. DSA ciphers always use DH key exchange and therefore need DH-parameters (see SSL\_CTX\_set\_tmp\_dh\_callback(3)).

When these conditions are not met for any cipher in the list (e.g. a client only supports export RSA ciphers with an asymmetric key length of 512 bits and the server is not configured to use temporary RSA keys), the "no shared cipher" (SSL\_R\_NO\_SHARED\_CIPHER) error is generated and the handshake will fail.

OSSL\_default\_cipher\_list() and OSSL\_default\_ciphersuites() replace SSL\_DEFAULT\_CIPHER\_LIST and TLS\_DEFAULT\_CIPHERSUITES, respectively. The cipher list defines are deprecated as of 3.0.

## RETURN VALUES

SSL\_CTX\_set\_cipher\_list() and SSL\_set\_cipher\_list() return 1 if any cipher could be selected and 0 on complete failure.

SSL\_CTX\_set\_ciphersuites() and SSL\_set\_ciphersuites() return 1 if the requested ciphersuite list was configured, and 0 otherwise.

## SEE ALSO

ssl(7), SSL\_get\_ciphers(3), SSL\_CTX\_use\_certificate(3),  
SSL\_CTX\_set\_tmp\_dh\_callback(3), openssl-ciphers(1)

## HISTORY

OSSL\_default\_cipher\_list() and OSSL\_default\_ciphersites() are new in 3.0.

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