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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'EVP\_ASYM\_CIPHER\_free.3ossl' command**

**\$ man EVP\_ASYM\_CIPHER\_free.3ossl**

EVP\_ASYM\_CIPHER\_FREE(3ossl)    OpenSSL    EVP\_ASYM\_CIPHER\_FREE(3ossl)

### NAME

EVP\_ASYM\_CIPHER\_fetch, EVP\_ASYM\_CIPHER\_free, EVP\_ASYM\_CIPHER\_up\_ref,  
EVP\_ASYM\_CIPHER\_is\_a, EVP\_ASYM\_CIPHER\_get0\_provider,  
EVP\_ASYM\_CIPHER\_do\_all\_provided, EVP\_ASYM\_CIPHER\_names\_do\_all,  
EVP\_ASYM\_CIPHER\_get0\_name, EVP\_ASYM\_CIPHER\_get0\_description,  
EVP\_ASYM\_CIPHER\_gettable\_ctx\_params,  
EVP\_ASYM\_CIPHER\_settable\_ctx\_params - Functions to manage  
EVP\_ASYM\_CIPHER algorithm objects

### SYNOPSIS

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

EVP_ASYM_CIPHER *EVP_ASYM_CIPHER_fetch(OSSL_LIB_CTX *ctx, const char *algorithm,
                                       const char *properties);

void EVP_ASYM_CIPHER_free(EVP_ASYM_CIPHER *cipher);
int EVP_ASYM_CIPHER_up_ref(EVP_ASYM_CIPHER *cipher);
const char *EVP_ASYM_CIPHER_get0_name(const EVP_ASYM_CIPHER *cipher);
int EVP_ASYM_CIPHER_is_a(const EVP_ASYM_CIPHER *cipher, const char *name);
OSSL_PROVIDER *EVP_ASYM_CIPHER_get0_provider(const EVP_ASYM_CIPHER *cipher);
void EVP_ASYM_CIPHER_do_all_provided(OSSL_LIB_CTX *libctx,
                                     void (*fn)(EVP_ASYM_CIPHER *cipher,
                                                  void *arg),
                                     void *arg);

int EVP_ASYM_CIPHER_names_do_all(const EVP_ASYM_CIPHER *cipher,
```

```

void (*fn)(const char *name, void *data),
void *data);

const char *EVP_ASYM_CIPHER_get0_description(const EVP_ASYM_CIPHER *cipher);
const OSSL_PARAM *EVP_ASYM_CIPHER_gettable_ctx_params(const EVP_ASYM_CIPHER *cip);
const OSSL_PARAM *EVP_ASYM_CIPHER_settable_ctx_params(const EVP_ASYM_CIPHER *cip);

```

## DESCRIPTION

`EVP_ASYM_CIPHER_fetch()` fetches the implementation for the given algorithm from any provider offering it, within the criteria given by the properties and in the scope of the given library context `ctx` (see `OSSL_LIB_CTX(3)`). The algorithm will be one offering functions for performing asymmetric cipher related tasks such as asymmetric encryption and decryption. See "ALGORITHM FETCHING" in `crypto(7)` for further information.

The returned value must eventually be freed with

```
EVP_ASYM_CIPHER_free().
```

`EVP_ASYM_CIPHER_free()` decrements the reference count for the `EVP_ASYM_CIPHER` structure. Typically this structure will have been obtained from an earlier call to `EVP_ASYM_CIPHER_fetch()`. If the reference count drops to 0 then the structure is freed.

`EVP_ASYM_CIPHER_up_ref()` increments the reference count for an `EVP_ASYM_CIPHER` structure.

`EVP_ASYM_CIPHER_is_a()` returns 1 if cipher is an implementation of an algorithm that's identifiable with name, otherwise 0.

`EVP_ASYM_CIPHER_get0_provider()` returns the provider that cipher was fetched from.

`EVP_ASYM_CIPHER_do_all_provided()` traverses all `EVP_ASYM_CIPHER`s implemented by all activated providers in the given library context `libctx`, and for each of the implementations, calls the given function `fn` with the implementation method and the given `arg` as argument.

`EVP_ASYM_CIPHER_get0_name()` returns the algorithm name from the provided implementation for the given cipher. Note that the cipher may have multiple synonyms associated with it. In this case the first name from the algorithm definition is returned. Ownership of the returned

string is retained by the cipher object and should not be freed by the caller.

`EVP_ASYM_CIPHER_names_do_all()` traverses all names for cipher, and calls `fn` with each name and data.

`EVP_ASYM_CIPHER_get0_description()` returns a description of the cipher, meant for display and human consumption. The description is at the discretion of the cipher implementation.

`EVP_ASYM_CIPHER_gettable_ctx_params()` and

`EVP_ASYM_CIPHER_settable_ctx_params()` return a constant `OSSL_PARAM` array that describes the names and types of key parameters that can be retrieved or set by a key encryption algorithm using

`EVP_PKEY_CTX_get_params(3)` and `EVP_PKEY_CTX_set_params(3)`.

## RETURN VALUES

`EVP_ASYM_CIPHER_fetch()` returns a pointer to an `EVP_ASYM_CIPHER` for success or `NULL` for failure.

`EVP_ASYM_CIPHER_up_ref()` returns 1 for success or 0 otherwise.

`EVP_ASYM_CIPHER_names_do_all()` returns 1 if the callback was called for all names. A return value of 0 means that the callback was not called for any names.

`EVP_ASYM_CIPHER_gettable_ctx_params()` and

`EVP_ASYM_CIPHER_settable_ctx_params()` return a constant `OSSL_PARAM` array or `NULL` on error.

## SEE ALSO

"ALGORITHM FETCHING" in `crypto(7)`, `OSSL_PROVIDER(3)`

## HISTORY

The functions described here were added in OpenSSL 3.0.

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