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

**\$ man EVP\_KEM\_free.3ossl**

EVP\_KEM\_FREE(3ossl)            OpenSSL            EVP\_KEM\_FREE(3ossl)

### NAME

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

### SYNOPSIS

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

EVP_KEM *EVP_KEM_fetch(OSSL_LIB_CTX *ctx, const char *algorithm,
                       const char *properties);

void EVP_KEM_free(EVP_KEM *kem);

int EVP_KEM_up_ref(EVP_KEM *kem);

const char *EVP_KEM_get0_name(const EVP_KEM *kem);

int EVP_KEM_is_a(const EVP_KEM *kem, const char *name);

OSSL_PROVIDER *EVP_KEM_get0_provider(const EVP_KEM *kem);

void EVP_KEM_do_all_provided(OSSL_LIB_CTX *libctx,
                             void (*fn)(EVP_KEM *kem, void *arg), void *arg);

int EVP_KEM_names_do_all(const EVP_KEM *kem,
                        void (*fn)(const char *name, void *data), void *data);

const char *EVP_KEM_get0_description(const EVP_KEM *kem);

const OSSL_PARAM *EVP_KEM_gettable_ctx_params(const EVP_KEM *kem);

const OSSL_PARAM *EVP_KEM_settable_ctx_params(const EVP_KEM *kem);
```

## DESCRIPTION

`EVP_KEM_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 kem related tasks such as key encapsulation and decapsulation. See "ALGORITHM FETCHING" in `crypto(7)` for further information.

The returned value must eventually be freed with `EVP_KEM_free()`. `EVP_KEM_free()` decrements the reference count for the `EVP_KEM` structure. Typically this structure will have been obtained from an earlier call to `EVP_KEM_fetch()`. If the reference count drops to 0 then the structure is freed.

`EVP_KEM_up_ref()` increments the reference count for an `EVP_KEM` structure.

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

`EVP_KEM_get0_provider()` returns the provider that `kem` was fetched from.

`EVP_KEM_do_all_provided()` traverses all `EVP_KEM`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_KEM_get0_name()` returns the algorithm name from the provided implementation for the given `kem`. Note that the `kem` 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 `kem` object and should not be freed by the caller.

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

`EVP_KEM_get0_description()` returns a description of the `kem`, meant for display and human consumption. The description is at the discretion of the `kem` implementation.

`EVP_KEM_gettable_ctx_params()` and `EVP_KEM_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 encapsulation algorithm using `EVP_PKEY_CTX_get_params(3)` and `EVP_PKEY_CTX_set_params(3)`.

## RETURN VALUES

`EVP_KEM_fetch()` returns a pointer to an `EVP_KEM` for success or `NULL` for failure.

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

`EVP_KEM_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_KEM_gettable_ctx_params()` and `EVP_KEM_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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