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Rocky Enterprise Linux 9.2 Manual Pages on command 'EVP_KEM_up_ref.3ossl'

\$ man EVP_KEM_up_ref.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_KEMs` 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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