



Red Hat Enterprise Linux Release 9.2 Manual Pages on 'EVP_PKEY_decrypt_init_ex.3ossl' command

```
$ man EVP_PKEY_decrypt_init_ex.3ossl
```

```
EVP_PKEY_DECRYPT(3ossl)      OpenSSL      EVP_PKEY_DECRYPT(3ossl)
```

NAME

EVP_PKEY_decrypt_init, EVP_PKEY_decrypt_init_ex, EVP_PKEY_decrypt -
decrypt using a public key algorithm

SYNOPSIS

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

```
int EVP_PKEY_decrypt_init(EVP_PKEY_CTX *ctx);
```

```
int EVP_PKEY_decrypt_init_ex(EVP_PKEY_CTX *ctx, const OSSL_PARAM params[]);
```

```
int EVP_PKEY_decrypt(EVP_PKEY_CTX *ctx,  
                    unsigned char *out, size_t *outlen,  
                    const unsigned char *in, size_t inlen);
```

DESCRIPTION

The `EVP_PKEY_decrypt_init()` function initializes a public key algorithm context using key `pkey` for a decryption operation.

The `EVP_PKEY_decrypt_init_ex()` function initializes a public key algorithm context using key `pkey` for a decryption operation and sets the algorithm specific params.

The `EVP_PKEY_decrypt()` function performs a public key decryption operation using `ctx`. The data to be decrypted is specified using the `in` and `inlen` parameters. If `out` is `NULL` then the maximum size of the output buffer is written to the `outlen` parameter. If `out` is not `NULL` then before the call the `outlen` parameter should contain the length of the `out` buffer, if the call is successful the decrypted data is written to `out` and the amount of data written to `outlen`.

NOTES

After the call to `EVP_PKEY_decrypt_init()` algorithm specific control operations can be performed to set any appropriate parameters for the operation. These operations can be included in the `EVP_PKEY_decrypt_init_ex()` call.

The function `EVP_PKEY_decrypt()` can be called more than once on the same context if several operations are performed using the same parameters.

RETURN VALUES

`EVP_PKEY_decrypt_init()`, `EVP_PKEY_decrypt_init_ex()` and `EVP_PKEY_decrypt()` return 1 for success and 0 or a negative value for failure. In particular a return value of -2 indicates the operation is not supported by the public key algorithm.

EXAMPLES

Decrypt data using OAEP (for RSA keys):

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

```
EVP_PKEY_CTX *ctx;
ENGINE *eng;
unsigned char *out, *in;
```

```

size_t outlen, inlen;
EVP_PKEY *key;

/*
 * NB: assumes key, eng, in, inlen are already set up
 * and that key is an RSA private key
 */
ctx = EVP_PKEY_CTX_new(key, eng);
if (!ctx)
    /* Error occurred */
if (EVP_PKEY_decrypt_init(ctx) <= 0)
    /* Error */
if (EVP_PKEY_CTX_set_rsa_padding(ctx, RSA_PKCS1_OAEP_PADDING) <= 0)
    /* Error */

/* Determine buffer length */
if (EVP_PKEY_decrypt(ctx, NULL, &outlen, in, inlen) <= 0)
    /* Error */

out = OPENSSL_malloc(outlen);

if (!out)
    /* malloc failure */

if (EVP_PKEY_decrypt(ctx, out, &outlen, in, inlen) <= 0)
    /* Error */

/* Decrypted data is outlen bytes written to buffer out */

```

SEE ALSO

[EVP_PKEY_CTX_new\(3\)](#), [EVP_PKEY_encrypt\(3\)](#), [EVP_PKEY_sign\(3\)](#),
[EVP_PKEY_verify\(3\)](#), [EVP_PKEY_verify_recover\(3\)](#), [EVP_PKEY_derive\(3\)](#)

HISTORY

These functions were added in OpenSSL 1.0.0.

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