



*Full credit is given to the above companies including the OS that this PDF file was generated!*

### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'EVP\_PKEY\_decrypt\_init.3ossl'***

***\$ man EVP\_PKEY\_decrypt\_init.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.

## COPYRIGHT

Copyright 2006-2022 The OpenSSL Project Authors. All Rights Reserved.

Licensed under the Apache License 2.0 (the "License"). You may not use  
this file except in compliance with the License. You can obtain a copy  
in the file LICENSE in the source distribution or at  
<<https://www.openssl.org/source/license.html>>.

3.0.7                    2023-07-13            EVP\_PKEY\_DECRYPT(3ossl)