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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'EVP_PKEY_verify_recover.3oss1' command

`$ man EVP_PKEY_verify_recover.3oss1`

`EVP_PKEY_VERIFY_RECOVER(3oss1)` `OpenSSL` `EVP_PKEY_VERIFY_RECOVER(3oss1)`

NAME

`EVP_PKEY_verify_recover_init`, `EVP_PKEY_verify_recover_init_ex`,
`EVP_PKEY_verify_recover` - recover signature using a public key
algorithm

SYNOPSIS

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

```
int EVP_PKEY_verify_recover_init(EVP_PKEY_CTX *ctx);  
int EVP_PKEY_verify_recover_init_ex(EVP_PKEY_CTX *ctx,  
                                     const OSSL_PARAM params[]);  
int EVP_PKEY_verify_recover(EVP_PKEY_CTX *ctx,  
                             unsigned char *rout, size_t *routlen,  
                             const unsigned char *sig, size_t siglen);
```

DESCRIPTION

`EVP_PKEY_verify_recover_init()` initializes a public key algorithm context `ctx` for signing using the algorithm given when the context was created using `EVP_PKEY_CTX_new(3)` or variants thereof. The algorithm is used to fetch a `EVP_SIGNATURE` method implicitly, see "Implicit fetch" in `provider(7)` for more information about implicit fetches.

`EVP_PKEY_verify_recover_init_ex()` is the same as `EVP_PKEY_verify_recover_init()` but additionally sets the passed parameters `params` on the context before returning.

The `EVP_PKEY_verify_recover()` function recovers signed data using `ctx`. The signature is specified using the `sig` and `siglen` parameters. If `rout` is `NULL` then the maximum size of the output buffer is written to the `routlen` parameter. If `rout` is not `NULL` then before the call the `routlen` parameter should contain the length of the `rout` buffer, if the call is successful recovered data is written to `rout` and the amount of data written to `routlen`.

NOTES

Normally an application is only interested in whether a signature verification operation is successful in those cases the `EVP_verify()` function should be used.

Sometimes however it is useful to obtain the data originally signed using a signing operation. Only certain public key algorithms can recover a signature in this way (for example RSA in PKCS padding mode).

After the call to `EVP_PKEY_verify_recover_init()` algorithm specific control operations can be performed to set any appropriate parameters for the operation.

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

RETURN VALUES

`EVP_PKEY_verify_recover_init()` and `EVP_PKEY_verify_recover()` 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

Recover digest originally signed using PKCS#1 and SHA256 digest:

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

EVP_PKEY_CTX *ctx;
unsigned char *rout, *sig;
size_t routlen, siglen;
EVP_PKEY *verify_key;

/*
 * NB: assumes verify_key, sig and siglen are already set up
 * and that verify_key is an RSA public key
 */
ctx = EVP_PKEY_CTX_new(verify_key, NULL /* no engine */);
if (!ctx)
    /* Error occurred */
if (EVP_PKEY_verify_recover_init(ctx) <= 0)
    /* Error */
if (EVP_PKEY_CTX_set_rsa_padding(ctx, RSA_PKCS1_PADDING) <= 0)
    /* Error */
if (EVP_PKEY_CTX_set_signature_md(ctx, EVP_sha256()) <= 0)
    /* Error */

/* Determine buffer length */
if (EVP_PKEY_verify_recover(ctx, NULL, &routlen, sig, siglen) <= 0)
    /* Error */

rout = OPENSSL_malloc(routlen);
```

```
if (!rout)
    /* malloc failure */

if (EVP_PKEY_verify_recover(ctx, rout, &routlen, sig, siglen) <= 0)
    /* Error */

/* Recovered data is routlen bytes written to buffer rout */
```

SEE ALSO

EVP_PKEY_CTX_new(3), EVP_PKEY_encrypt(3), EVP_PKEY_decrypt(3),
EVP_PKEY_sign(3), EVP_PKEY_verify(3), EVP_PKEY_derive(3)

HISTORY

The EVP_PKEY_verify_recover_init() and EVP_PKEY_verify_recover() functions were added in OpenSSL 1.0.0.

The EVP_PKEY_verify_recover_init_ex() function was added in OpenSSL 3.0.

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