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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'BN\_BLINDING\_invert\_ex.3ossl'***

***\$ man BN\_BLINDING\_invert\_ex.3ossl***

BN\_BLINDING\_NEW(3ossl)      OpenSSL      BN\_BLINDING\_NEW(3ossl)

#### NAME

BN\_BLINDING\_new, BN\_BLINDING\_free, BN\_BLINDING\_update,  
BN\_BLINDING\_convert, BN\_BLINDING\_invert, BN\_BLINDING\_convert\_ex,  
BN\_BLINDING\_invert\_ex, BN\_BLINDING\_is\_current\_thread,  
BN\_BLINDING\_set\_current\_thread, BN\_BLINDING\_lock, BN\_BLINDING\_unlock,  
BN\_BLINDING\_get\_flags, BN\_BLINDING\_set\_flags, BN\_BLINDING\_create\_param  
- blinding related BIGNUM functions

#### SYNOPSIS

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

```
BN_BLINDING *BN_BLINDING_new(const BIGNUM *A, const BIGNUM *Ai,  
                             BIGNUM *mod);
```

```
void BN_BLINDING_free(BN_BLINDING *b);
```

```
int BN_BLINDING_update(BN_BLINDING *b, BN_CTX *ctx);
```

```
int BN_BLINDING_convert(BIGNUM *n, BN_BLINDING *b, BN_CTX *ctx);
```

```

int BN_BLINDING_invert(BIGNUM *n, BN_BLINDING *b, BN_CTX *ctx);
int BN_BLINDING_convert_ex(BIGNUM *n, BIGNUM *r, BN_BLINDING *b,
    BN_CTX *ctx);
int BN_BLINDING_invert_ex(BIGNUM *n, const BIGNUM *r, BN_BLINDING *b,
    BN_CTX *ctx);
int BN_BLINDING_is_current_thread(BN_BLINDING *b);
void BN_BLINDING_set_current_thread(BN_BLINDING *b);
int BN_BLINDING_lock(BN_BLINDING *b);
int BN_BLINDING_unlock(BN_BLINDING *b);
unsigned long BN_BLINDING_get_flags(const BN_BLINDING *b);
void BN_BLINDING_set_flags(BN_BLINDING *b, unsigned long flags);
BN_BLINDING *BN_BLINDING_create_param(BN_BLINDING *b,
    const BIGNUM *e, BIGNUM *m, BN_CTX *ctx,
    int (*bn_mod_exp)(BIGNUM *r,
        const BIGNUM *a,
        const BIGNUM *p,
        const BIGNUM *m,
        BN_CTX *ctx,
        BN_MONT_CTX *m_ctx),
    BN_MONT_CTX *m_ctx);

```

## DESCRIPTION

BN\_BLINDING\_new() allocates a new BN\_BLINDING structure and copies the A and Ai values into the newly created BN\_BLINDING object.

BN\_BLINDING\_free() frees the BN\_BLINDING structure. If b is NULL, nothing is done.

BN\_BLINDING\_update() updates the BN\_BLINDING parameters by squaring the A and Ai or, after specific number of uses and if the necessary parameters are set, by re-creating the blinding parameters.

BN\_BLINDING\_convert\_ex() multiplies n with the blinding factor A. If r

is not NULL a copy the inverse blinding factor  $A_i$  will be returned in `r` (this is useful if a RSA object is shared among several threads).

`BN_BLINDING_invert_ex()` multiplies `n` with the inverse blinding factor  $A_i$ . If `r` is not NULL it will be used as the inverse blinding.

`BN_BLINDING_convert()` and `BN_BLINDING_invert()` are wrapper functions for `BN_BLINDING_convert_ex()` and `BN_BLINDING_invert_ex()` with `r` set to NULL.

`BN_BLINDING_is_current_thread()` returns whether the `BN_BLINDING` structure is owned by the current thread. This is to help users provide proper locking if needed for multi-threaded use.

`BN_BLINDING_set_current_thread()` sets the current thread as the owner of the `BN_BLINDING` structure.

`BN_BLINDING_lock()` locks the `BN_BLINDING` structure.

`BN_BLINDING_unlock()` unlocks the `BN_BLINDING` structure.

`BN_BLINDING_get_flags()` returns the `BN_BLINDING` flags. Currently there are two supported flags: `BN_BLINDING_NO_UPDATE` and `BN_BLINDING_NO_RECREATE`. `BN_BLINDING_NO_UPDATE` inhibits the automatic update of the `BN_BLINDING` parameters after each use and `BN_BLINDING_NO_RECREATE` inhibits the automatic re-creation of the `BN_BLINDING` parameters after a fixed number of uses (currently 32). In newly allocated `BN_BLINDING` objects no flags are set.

`BN_BLINDING_set_flags()` sets the `BN_BLINDING` parameters flags.

`BN_BLINDING_create_param()` creates new `BN_BLINDING` parameters using the exponent `e` and the modulus `m`. `bn_mod_exp` and `m_ctx` can be used to pass special functions for exponentiation (normally `BN_mod_exp_mont()` and `BN_MONT_CTX`).

## RETURN VALUES

`BN_BLINDING_new()` returns the newly allocated `BN_BLINDING` structure or `NULL` in case of an error.

`BN_BLINDING_update()`, `BN_BLINDING_convert()`, `BN_BLINDING_invert()`, `BN_BLINDING_convert_ex()` and `BN_BLINDING_invert_ex()` return 1 on success and 0 if an error occurred.

`BN_BLINDING_is_current_thread()` returns 1 if the current thread owns the `BN_BLINDING` object, 0 otherwise.

`BN_BLINDING_set_current_thread()` doesn't return anything.

`BN_BLINDING_lock()`, `BN_BLINDING_unlock()` return 1 if the operation succeeded or 0 on error.

`BN_BLINDING_get_flags()` returns the currently set `BN_BLINDING` flags (a unsigned long value).

`BN_BLINDING_create_param()` returns the newly created `BN_BLINDING` parameters or `NULL` on error.

## HISTORY

`BN_BLINDING_thread_id()` was first introduced in OpenSSL 1.0.0, and it deprecates `BN_BLINDING_set_thread_id()` and `BN_BLINDING_get_thread_id()`.

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BN\_BLINDING\_NEW(3ossl)