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

$ man BN_BLINDING_new.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 Ai 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 Ai. 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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